Vol. 915 Number 1

OFFICIAL GAZETTE

of the UNITED STATES PATENT OFFICE

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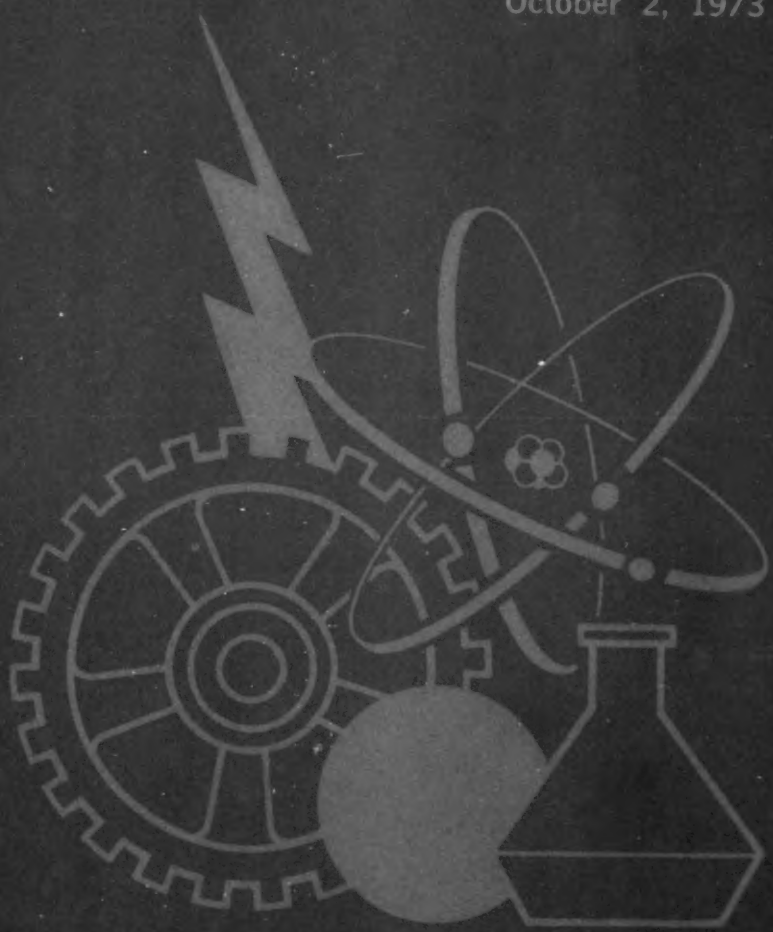
PATENTS

October 2, 1973



U. S. DEPARTMENT OF COMMERCE

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

October 2, 1973 Volume 915 Number 1

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PATENT NOTICES

Certificates of Correction for the Week of Oct. 2, 1973

P.P. 3,184	3,703,461	3,716,696	3,727,052
P.P. 3,185	3,703,528	3,716,894	3,728,800
P.P. 3,188	3,703,705	3,716,908	3,728,888
P.P. 3,189	3,703,969	3,717,001	3,729,321
P.P. 3,233	3,704,310	3,717,212	3,729,479
Re. 27,648	3,704,345	3,717,270	3,729,529
D. 226,877	3,705,409	3,717,314	3,730,014
3,270,353	3,705,567	3,717,566	3,730,189
3,473,976	3,705,896	3,717,685	3,730,278
3,506,893	3,706,492	3,717,716	3,730,284
3,527,564	3,706,751	3,718,056	3,730,755
3,581,316	3,708,551	3,718,542	3,730,786
3,583,067	3,708,921	3,718,577	3,731,529
3,586,093	3,708,935	3,718,656	3,731,649
3,592,977	3,708,996	3,718,785	3,731,796
3,602,307	3,709,232	3,719,035	3,732,141
3,617,738	3,710,095	3,719,047	3,732,177
3,642,121	3,710,169	3,719,070	3,732,320
3,643,137	3,710,583	3,719,104	3,732,510
3,651,580	3,710,591	3,719,277	3,732,843
3,657,276	3,710,792	3,719,477	3,733,061
3,660,292	3,710,865	3,719,529	3,733,198
3,662,032	3,711,340	3,719,593	3,733,369
3,666,499	3,711,669	3,719,604	3,733,405
3,666,865	3,711,821	3,719,677	3,733,430
3,677,626	3,712,474	3,719,689	3,733,576
3,679,783	3,712,478	3,719,734	3,733,653
3,681,290	3,712,530	3,719,827	3,733,790
3,681,369	3,712,938	3,719,887	3,733,988
3,682,709	3,713,856	3,720,586	3,734,161
3,682,777	3,713,920	3,720,863	3,734,217
3,682,981	3,714,274	3,720,972	3,734,766
3,685,273	3,714,378	3,721,534	3,735,465
3,688,085	3,714,437	3,721,649	3,735,468
3,688,415	3,715,222	3,721,699	3,735,744
3,689,510	3,715,255	3,721,864	3,735,999
3,689,657	3,715,286	3,721,894	3,736,520
3,689,683	3,715,705	3,723,281	3,736,722
3,691,494	3,715,902	3,723,666	3,736,898
3,694,138	3,716,110	3,723,888	3,736,972
3,697,655	3,716,481	3,725,108	3,737,000
3,697,956	3,716,502	3,725,212	3,738,803
3,698,590	3,716,537	3,726,333	3,739,105
3,700,305	3,716,557	3,726,948	3,744,499
3,700,492	3,716,573	3,727,051	

Errata

All reference to Patent Number 3,702,402 to David F. Jacobs, Method and Apparatus for Light Detector Fabrication Without Brazing, appearing in the OFFICIAL GAZETTE of Nov. 7, 1972, should be deleted as the aforementioned patent is a duplication of Patent Number 3,683,192.

All reference to Patent Number 3,702,403 to Hirotoshi Kishi, Optical Testing Apparatus Comprising Means for Flowing Liquids in Free Fall Condition at Constant Flow Rate, appearing in the OFFICIAL GAZETTE of Nov. 7, 1972, should be deleted as the aforementioned patent is a duplication of Patent Number 3,691,391.

All reference to Patent Number 3,721,025 to Matthew F. Orr, Power Driven Snow Blower, appearing in the OFFICIAL GAZETTE of Mar. 20, 1973, should be deleted since no patent should have been granted.

Patents Available for Licensing or Sale

2,995,619. SYSTEM OF TELEVISION TRANSMISSION AND PHOTOGRAPHIC REPRODUCTION OF THE TELEVISED IMAGE. Samuel Freeman, 13 Birchwood Court E., Syosset, N.Y., 11791.

3,237,885. SPACE CRAFT. Jack L. Mohar, 41 W. Arbor St., Long Beach, Calif., 90805.

3,424,152. TONE DOWNER. Irene D. Kuhlman, 50 Plaza Square, Apt. 112, 16th and Olive, St. Louis, Mo., 63103.

3,474,799. TOOTH SPACE CLEANER USING DENTAL FLOSS LINKS ON HOLDER. Vito P. Cappello, 1047 Franklin St., Santa Monica, Calif., 90403.

3,675,879. METHOD AND MEANS FOR CREATING ARTIFICIAL GRAVITY IN SPACECRAFT. Harry B. Fuchs, Box 302, Farmingdale, N.Y., 11735.

3,707,489. PROCESS OF PREPARING ETHYLIDENE COMPOUNDS. VEB Jenapharm, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,727,118. CONTACTLESS REVERSIBLE DEVICE IN AN ELECTRIC CAR. Nippon Gijutsu Boeki Co., Ltd., 32F Kasumigaseki Bldg., 2-5 Kasumigaseki, 3-chome, Chiyoda-ku, Tokyo 100, Japan.

3,727,772. APPARATUS FOR CENTERING AND CLAMPING ELONGATED WORKPIECES. Th. Kieserling & Albrecht, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,733,985. CAMERA FILM IMAGING DEVICE. Lester Gordon, 10 Louise St., Lewiston, Maine.

3,734,911. DIALKYL-XANTHINE DERIVATIVES. Dr. Walter Bestian, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,738,695. REMOVABLE SIDE CAR BUMPER. Robert B. McBee, 5700 Arlington Ave., Apt. 4R, Riverdale, N.Y., 10471.

3,740,874. SNOW CLEANERS. Marcel Boschung. Correspondence to: Bovard & Cie, Optingenstrasse 16, CH-3000 Bern 25, Switzerland.

3,741,218. INFRA RED HEAT THERAPY APPARATUS. Kurt Novak, 3307 California Ave., St. Louis, Mo., 63118.

3,747,849. CONTROL DEVICE FOR A HEATING INSTALLATION. Werner Heierli. Correspondence to: Werner W. Kleeman, Suite 501, Crystal Plaza 1, 2001 Jefferson Davis Highway, Arlington, Va., 22202.

3,750,305. WEB DRYER. Alois Loser, Correspondence to: Synnestvedt & Lechner, 12 S. 12th St., Philadelphia, Pa., 19107.

3,750,385. CALENDAR WATCH SETTING MECHANISM FOR VARIOUS MONTH LENGTHS. Hans Kocher, Erlenweg 24, 3294 Buren a/Aare, Canton of Bern, Switzerland.

3,754,348. FLOATING FISH TRAP. Frank J. Ramsey. Correspondence to: J. Bruce Synnott, Jr., 1900 Continental National Bank Bldg., Fort Worth, Tex., 76102.

3,755,931. SNOW CUTTERS. Hans Gisler. Correspondence to: Browne, Beveridge, DeGrandi & Kline, Federal Bar Building West, 1819 H St. NW., Washington, D.C., 20006.

3,757,764. SLEEPING PILLOW. J. C. Downing. Correspondence to: White & White, 220 Montgomery St., San Francisco, Calif., 94104.

General Motors Corporation is prepared to grant nonexclusive license under the following patent upon reasonable terms.

Application for license may be addressed to: Director, Patent Section, General Motors Bldg., 3044 West Grand Blvd., Detroit, Mich., 48202.

3,575,065. DIFFERENTIAL GEARING ARRANGEMENT.

General Electric Company is prepared to grant non-exclusive licenses under the following 10 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: Patent Counsel, Data Comm. Products Dept., General Electric Co., Lynchburg, Va., 24502.

3,739,312. SPOOL WITH MEANS FOR START WIRE INSULATION.

Applications for license under the following 3 patents may be addressed to: Division Patent Counsel, Switchgear Equipment Business Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,406,327. ELECTRIC POWER INVERTER HAVING A WELL REGULATED NEARLY SINUSOIDAL OUTPUT VOLTAGE.

3,459,943. SILICON-CONTROLLED RECTIFIER GATING CIRCUITS WITH A HIGH FREQUENCY TRIGGERING VOLTAGE AND PHOTOCELLS.

3,519,915. HIGH-FREQUENCY SINE-WAVE STATIC INVERTER.

Applications for license under the following 3 patents may be addressed to: General Electric Company, Division Patent Counsel, Housewares Business Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,590,503. SPRAY IRON.

3,590,504. SPRAY IRON.

3,723,932. THERMAL PROTECTIVE ASSEMBLY.

Applications for license under the following 3 patents may be addressed to: Division Patent Counsel, Space Division, General Electric Co., P.O. Box 8555, Philadelphia, Pa., 19101.

3,739,369. HISTORICAL DATA DISPLAY.

3,744,555. AUTOMATIC CONTROL OF LIQUID COOLING GARMENT BY CUTANEOUS AND EXTERNAL AUDITORY MEATUS TEMPERATURES.

3,748,468. AUTOMATIC ELECTRON MICROSCOPE FIELD COUNTER.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

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Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for Licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
National Institutes of Health, Chief, Patent Branch,
Westwood Building, Bethesda, Md. 20014

Patent 3,710,121. Shipping Container for Radioactive Material Using Safety Closure Devices. Filed Aug. 13, 1970. Patented Jan. 9. 1973. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

Patent application 336,319. Solid Medium Thermal Engine. Filed Feb. 27, 1973. PC $3.25/MF $1.45.

Patent application 359,958. Sprag Solenoid Brake. Filed May 14, 1973. PC $3/MF $1.45.

[FR Doc. 73–18201; Filed 8–28–73; 8:45 am]

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
National Institutes of Health, Chief, Patent Branch,
Westwood Building, Bethesda, Md. 20014

Patent application 291,180. Direct Digital Control Pipette. Filed Sept. 22, 1972. PC $3/MF $0.95.

Patent application 354,098. Isolation and Purification of Active Principle, Fruit of Synsepalum Dulcificum and Method of Treatment of Obesity. Filed Apr. 24, 1973. PC $3/MF $0.95.

Patent application 275,777. Countercurrent Chromatography With Flow Through Coil Planet Centrifuge. Filed July 27, 1972. PC $3/MF $0.95.

Patent application 330,647. Non-Contact Photographic Identification Device or Labeling Gamma Camera Images. Filed Feb. 8, 1973. PC $3/MF $1.45.

Patent 3,715,281. Transgrow. Filed Oct. 23, 1970. Patented Feb. 6, 1973. Not available NTIS.

U.S. DEPARTMENT OF COMMERCE
Assistant General Counsel for Administration,
Washington, D.C. 20230

Patent 3,312,949. Stack Forming Synchronizer for a Sorting Machine. Filed Apr. 6, 1964. Patented Apr. 4, 1967. Not available NTIS.

Patent 3,410,100. High Vacuum Baffle Using Cooled Chevron Shaped Members. Filed Mar. 18, 1965. Patented Nov. 12, 1968. Not available NTIS.

Patent 3,571,597. System for Phase Stabilizating Widely Separated Oscillators. Filed Oct. 14, 1969. Patented Mar. 23, 1971. Not available NTIS.

Patent 3,329,957. Antenna System Employing Human Body as Radiator. Filed May 5, 1959. Patented July 4, 1967. Not available NTIS.

Patent 3,397,392. Information Storage and Category Selector. Filed Oct. 31, 1966. Patented Aug. 13, 1968. Not available NTIS.

Patent 3,273,160. Identing Recorder With Illumination Means. Filed May 15, 1964. Patented Sept. 13, 1966. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 223,270. A Hemodialyzer With Tapered Slit Blood Ports and Baffles. Filed Feb. 3, 1972. PC $3/MF $0.95.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Streets NW.,
Washington, D.C. 20240

Patent application 50,313. Removal of Sulfur Oxides From Gases With Calcium Phosphates and Phosphate Rock. Filed June 26, 1970. PC $3/MF $0.95.

Patent 3,739,077. Multiple Conductor Bundle Support and Spacer. Filed May 31, 1972. Patented June 12, 1973. Not available NTIS.

Patent 3,737,384. Decomposition of Halogenated Organic Compounds Using Metallic Couples. Filed Dec. 23, 1970. Patented June 5, 1973. Not available NTIS.

Patent 3,725,235. Dynamically Formed Electrodialysis Membranes. Filed Mar. 23, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,725,260. Separation of Pesticides From Lipids by GEL Permeation Chromatography. Filed Dec. 28, 1971. Patented Apr. 3, 1973. Not available NTIS.

[FR Doc. 73–18726; Filed 9–4–73; 8:45 am]

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 1, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-20-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-01-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-11-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-01-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director.. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-19-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	1-24-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food: Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-15-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-27-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-03-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-20-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	8-01-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	10-24-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-25-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-05-72

Expiration of patents: The patents within the range of numbers indicated below expire during September 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,761,142 to 2,764,757, inclusive
Plant Patents..... Numbers 1,509 to 1,521, inclusive

REISSUES

OCTOBER 2, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

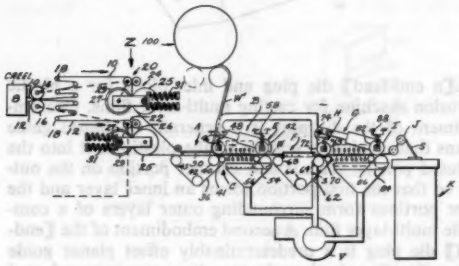
27,764
SYSTEM FOR CONVERTING CONTINUOUS FILAMENT TOW INTO STAPLE SLIVER

Elbert F. Morrison, Rte. 1, Box 35, Clarksville, Va. 23927, and Raymond D. Joy, Rte. 3, Box 584, Madison, N.C. 27025

Original No. 3,522,634, dated Aug. 4, 1970, Ser. No. 686,141, Nov. 28, 1967. Application for reissue Oct. 3, 1972, Ser. No. 294,544

Int. Cl. D01g *1/00*

U.S. Cl. 19—.6 14 Claims



A textile system and process of converting continuous filament or length tow into staple lengths by cutting or fracturing the filaments to a predetermined length and continuously debonding the cut or fractured tow, straightening the turn back fibers, randomizing the staple fibers and removing waste such as mashed sections (fish food or the like) from the sliver. The system and process further contemplates drafting the randomized fibers to a homogeneous sliver of predetermined size.

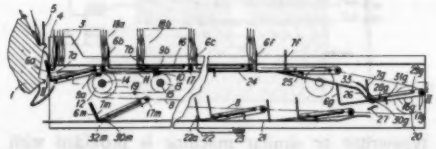
27,765
APPARATUS FOR ARRANGING SUBSTANTIALLY LAMINAR ARTICLES INTO SPACED GROUPS

Jacob Salomon, 10 Weizman Square, Holon, Israel

Original No. 3,662,875, dated May 16, 1972, Ser. No. 93,736, Nov. 30, 1970. Application for reissue June 21, 1972, Ser. No. 264,976

Int. Cl. B65g *15/00*

U.S. Cl. 198—180 15 Claims



A counting mechanism in which a stream of articles passing along a guide are interposed with regularly arranged spacer fingers which expand to bunch up the articles into discrete separated groups prior to delivery at for example a boxing station. Expansion of the fingers may be effected by causing the fingers to travel in pairs, one finger of each pair being driven by a first conveyor, and the other finger of each pair being slidably connected thereto and conducted by a second, slower moving conveyor.

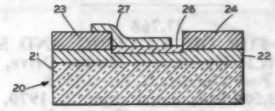
27,766
METHODS OF MANUFACTURING THIN FILM COMPONENTS

Alexander M. Haufmann, Allentown, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Original No. 3,400,456, dated Sept. 10, 1968, Ser. No. 483,594, Aug. 30, 1965. Application for reissue Aug. 20, 1970, Ser. No. 65,548

Int. Cl. H01c *7/00, 17/00*

U.S. Cl. 29—620 10 Claims



[The resistance of] *"Open" holes and "shunt" holes are produced by a laser beam in* an electrical component comprising a substrate having coated thereon at least two conductive layers separated by a nonconductive layer. [is adjusted by applying a laser beam to the component.] *One example of the utility of such a technique is the adjustment of resistance of the electrical component.* If the resistance of the component is less than a desired value it is increased by forming open holes in one or both of the conductive layers with a high energy laser pulse of short duration which evaporates the layers through which it passes. If the resistance is greater than the desired value it is decreased by forming shunt holes between the conductive layers with a lower energy pulse of longer duration which partially evaporates and melts the layers through which it passes thus causing a connection between the conductive layers.

27,767
FLUID LEVEL GAUGE ASSEMBLY

Charles F. Schoepflin, 8244 Crenshaw Drive, Inglewood, Calif. 90305

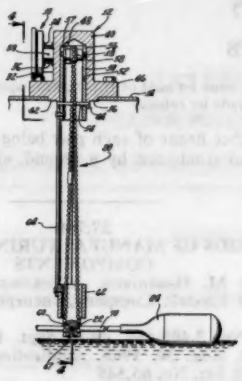
Original No. 3,638,493, dated Feb. 1, 1972, Ser. No. 101,450, Dec. 28, 1970. Application for reissue Apr. 19, 1972, Ser. No. 245,666

Int. Cl. G01f *23/12*

U.S. Cl. 73—318 4 Claims

An easy to construct and install gauge assembly for continuously monitoring the level of fluid in a tank in response to movement of a float secured to a lower shaft of the assembly. The assembly comprises a gauge on a support body over a small opening in the top of the tank and responsive to turning of an upper shaft within the support body. Upper and lower brackets connected by a support arm extend from the body within the tank. The upper bracket is releasably secured in a vertical bore in the body adjacent the gauge. The upper and lower brackets include a pair of upper and lower open-ended slots, respectively, for receiving the upper and lower shafts and sprockets for supporting a continuous loop of chain. The pairs of upper and lower slots and hence the upper and lower shafts are angularly displaced at an angle greater

than 90° and less than 180° whereby the chain is twisted to remove undesired slack and such that vertically ex-



tending portions of the chain are spaced from the support arm from each other.

27,768

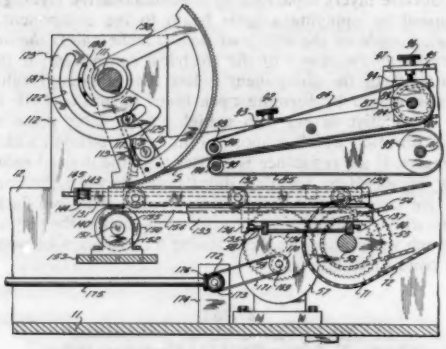
APPARATUS FOR DIE CUTTING AND SCORING

Clovis F. Deslauriers, Harbor Drive, Port Chester, N.Y. 10573

Original No. 3,504,584, dated Apr. 7, 1970, Ser. No. 728,695, May 13, 1968. Application for reissue Apr. 6, 1972, Ser. No. 241,853

Int. Cl. B26d *3/08, 9/00*

U.S. Cl. 83—9 **7 Claims**



A pressure applying member having a segmental arcuate surface is *oscillated* [reciprocated] about a horizontal axis and synchronously to the reciprocation of a die bed. Said arcuate surface is provided with cam actuated stops yieldingly mounted to position a paper sheet on said arcuate surface and the die bed. The pressure applying member is reciprocated by cranks imparting [to and fro] *actuated* motion or [rotary reciprocation] to toothed segments meshing with pinions connected to the axis of the pressure applying member. The pressure applying member is provided with toothed segments meshing with racks arranged on the die bed to reciprocate said die bed synchronously with the pressure applying member. The die bed is supported during the cutting and scoring operation by a roller *which is rotated* [rotated to and fro] by the reciprocation of die bed through racks carried by the die bed and meshing with pinions connected to the axis of the roller.

27,769

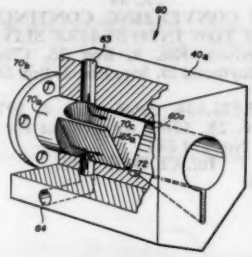
APPARATUS FOR CASTING MULTI-LAYER COMPOSITE FILM

Larry O. Stafford, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Original No. 3,583,032, dated June 8, 1971, Ser. No. 734,335, June 4, 1968. Application for reissue Feb. 9, 1972, Ser. No. 224,762

Int. Cl. B29c *27/14*

U.S. Cl. 425—131 **13 Claims**



A [n end-feed] die plug and inlet block for a plastic extrusion machine for casting multi-layer films. One embodiment of the die plug is a generally V-shaped guide means that receives a portion of the plastic melt into the enclosed portion thereof and another portion on the outside so that the first portion forms an inner layer and the other portions form surrounding outer layers of a composite multi-layer film. A second embodiment of the [end-feed] die plug is a predeterminably offset planar guide means directing plastic melts to a die means in preselected thickness ratios for a two-layer composite film. The inlet block is provided with one passageway feeding melt along a straight line path into the die means and another passageway feeding melt at an acute angle to the straight line path so that the plastic melt passing through the second passageway reaches the die outlet prior to the melt passing through the first passageway.

27,770

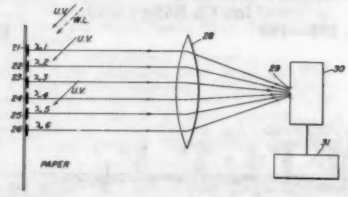
CODED INK RECORDING AND READING

Lester Aaron Siegel, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Original No. 3,486,006, dated Dec. 23, 1969, Ser. No. 526,193, Feb. 9, 1966. Application for reissue Dec. 9, 1971, Ser. No. 206,569

Int. Cl. G06k *1/12, 7/12*

U.S. Cl. 235—61.11 E **6 Claims**



A typewriter or similar machine is provided with a ribbon having horizontal zones each zone having an ink containing a single photoluminescent or other color selective component of a code which is different from that of every other horizontal zone in the ribbon. Code hammers, either arranged on a type bar or a single head with controllable hammers, strike through the particular ribbon zones corresponding to the code for the letter or other symbol on the typewriter keyboard. This results in printing a series of small, vertically spaced marks corre-

sponding to the code. If desired an additional zone of the ribbon may have ordinary ink and a type bar may also have a shaped symbol that strikes this zone. Readout is by simultaneous illumination of all of the code marks by ultraviolet light or if there are some code marks which are visible colors by successive illumination with ultraviolet light and then with visible light. As the whole of the code marking area is illuminated at the same time the problem of misalignment in readout is eliminated.

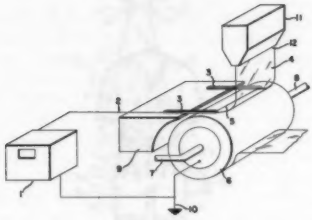
27,771
PROCESS FOR QUENCHING EXTRUDED POLYMERIC FILM

John Edward Owens, Hockessin, Del., and Wolf Randolph Vieth, Belle Mead, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original No. 3,223,757, dated Dec. 14, 1965, Ser. No. 126,818, July 21, 1961. Application for reissue Nov. 11, 1971, Ser. No. 197,914

Int. Cl. B29d *7/02*

U.S. Cl. 264—22 **15 Claims**



This invention relates to the preparation of organic thermoplastic polymers in the form of thin films. More particularly, the invention relates to the preparation of melt extruded polymeric films *utilizing an electrostatic charge to cause the extruded film to adhere firmly to a quenching surface in the process.*

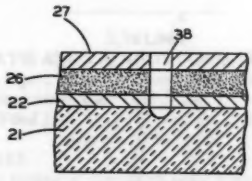
27,772
METHOD OF MANUFACTURING THIN FILM COMPONENTS

Alexander M. Hanfmann, Allentown, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Original No. 3,400,456, dated Sept. 10, 1968, Ser. No. 483,594, Aug. 30, 1965, which is a division of Ser. No. 65,548, Aug. 20, 1970. Application for reissue Oct. 15, 1971, Ser. No. 189,544

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 L M **6 Claims**



[The resistance of] *"Open" holes and "shunt" holes are produced by a laser beam in* an electrical component comprising a substrate having coated thereon at least two conductive layers separated by a nonconductive layer. [is adjusted by applying a laser beam to the component.] *One example of the utility of such a technique is the adjustment of resistance of the electrical component.* If the resistance of the component is less than a desired value it is increased by forming open holes in one or both of the conductive layers with a high energy laser pulse of short duration which evaporates the layers through which it passes. If the resistance is greater than the desired value it is decreased by forming shunt holes between the conductive layers with a lower energy pulse of longer duration which partially evaporates and melts the layers through which it passes thus causing a connection between the conductive layers.

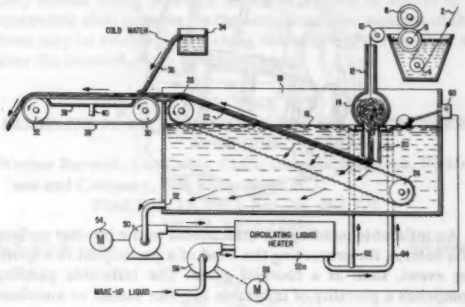
27,773
METHOD FOR THE CONTINUOUS TEXTURIZING OR VOLUMINIZING OF TEXTILE MATERIALS

Julius Hermes, Martinsville, Va., assignor to Martin Processing Company, Incorporated, Martinsville, Va.

Original No. 3,518,734, dated July 7, 1970, Ser. No. 711,057, Mar. 6, 1968. Application for reissue Jan. 27, 1971, Ser. No. 110,347

Int. Cl. D02g *1/00*

U.S. Cl. 28—72.1 **3 Claims**



Textile materials are texturized, voluminized or bulked by contacting same with a relatively low boiling liquid, such as water or alcohol, and then with a hot relatively high boiling liquid. The resulting flashing of the relatively low boiling liquid into vapor separates, entangles, intermingles and intertwines the filaments of the textile material.

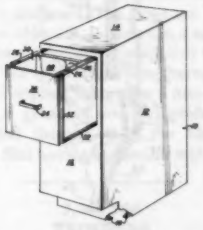
27,774
COMPACTOR

Karl W. Jernstrom, P.O. Box 278, 160 Woodport Road, Sparta, N.J. 07871

Original No. 3,460,463, dated Aug. 12, 1969, Ser. No. 646,117, June 14, 1967. Application for reissue Nov. 27, 1970, Ser. No. 93,516

Int. Cl. B30b *1/18*

U.S. Cl. 100—52 **24 Claims**



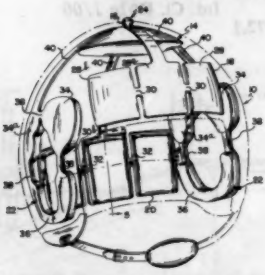
Trash compactor structure in which a reciprocating piston is mounted in a drawer and the compacting force is between the piston and the front end of the drawer and the trash is filled by simple opening of the drawer to place the trash to be compacted between the piston and the front end, and servicable by removal of the entire drawer from a framework support.

PATENTS

GRANTED OCTOBER 2, 1973

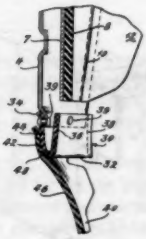
GENERAL AND MECHANICAL

3,761,959
INFLATABLE PADDING FOR FOOTBALL HELMET OR THE LIKE
Fred R. Dunning, 3800 Oakes Rd., Brecksville, Ohio
Filed Dec. 27, 1971, Ser. No. 212,073
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **11 Claims**



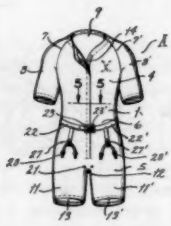
An inflatable padding for attachment to the interior surface of a helmet, for protecting the head of a participant in a sporting event, such as a football game. The inflatable padding comprises a plurality of inflatable bag-like means or members adapted for positioning about the head of the wearer, with means coupling at least certain of the bag-like members together for transfer of pressurized fluid therebetween, and with a valve means coacting with said bag-like members for enabling insertion of pressurized fluid thereinto, with the valve means including an arrangement for selective substantially simultaneous inflation of some of the members with respect to other of the members. Inflation of the padding while on the head of the wearer, provides for a snug custom-like fit on the helmet with the head of the wearer.

3,761,960
LEG GUARD
Thomas A. Woodcock, St. Louis, Mo., assignor to A-T-O Inc., Willoughby, Ohio
Filed Dec. 27, 1971, Ser. No. 212,132
Int. Cl. A41d *13/00*
U.S. Cl. 2—22 **11 Claims**



A leg guard for use by hockey players includes a relatively rigid shin piece and a knee cap, both of which are connected together and backed by a padding material. A flap connects with the lower end of the shin piece, and that flap may either be folded backwardly across the lower end of the shin piece and into the interior of the leg guard, or else it may be extended and caught under the tongue of the skate shoe to provide additional protection for the player's instep. The padding behind the knee cap retains an auxiliary pad which wraps around the player's leg at the knee, and that auxiliary pad affords added protection for the fibro cartilage and helps protect the medial collateral ligaments by stabilizing the medial and lateral condyles when impacts are received at the knee.

3,761,961
ATHLETIC UNDERGARMENT
Michael F. Martin, 1123 Raritan, St. Louis, and Lorne S. Keeler, 526 W. Washington, Kirkwood, both of Mo.
Filed Dec. 8, 1971, Ser. No. 205,835
Int. Cl. A41b *9/00*
U.S. Cl. 2—78 C **6 Claims**



A unitary undergarment for primarily athletic usage comprising upper and lower body covering sections; there being sleeves of less than elbow length and legs for termination upwardly of the knees. Said garment contains a continuous central line of opening with non-rigid fastener means; belt sections extending across the front of said garment with interengaging means and stocking supports suspended from each belt section; a resilient insert being provided in the rear of said garment for conducing to freedom of movement with maintenance of a snug fit; ventilation means being provided in the underarm and crotch zones.

3,761,962
VENTILATED SUIT
Kent R. Myers, 919 W. Colter Ave., Phoenix, Ariz.
Filed Jan. 29, 1973, Ser. No. 327,487
Int. Cl. A41d *1/02, 1/06*
U.S. Cl. 2—79 **9 Claims**

A protective outer leather garment is disclosed, which garment includes a ventilation system to reduce the probability of

heat prostration by the wearer. A plurality of apertures, which apertures permit a flow of air intermediate the garment and the wearer, are disposed within low stress areas of the garment. A backing material, which material is pliable and of a low stretch or non-stretch type, is attached adjacent the interior side of the leather in proximity to the apertures. Thereby, the stress concentrations attendant the apertured leather are relieved without affecting the normal pliability of the leather and the inherent comfort of the garment is preserved.

3,761,963

NECKTIE WITH SIMULATED FOUR-IN-HAND KNOT AND TIE-TAC THEREFOR

Earl T. Nokes, Armstrong, Iowa

Filed June 16, 1971, Ser. No. 153,775
Int. Cl. A41d *25/02*
U.S. Cl. 2—150 **1 Claim**

A necktie device is provided with a band section which is adapted to overlie the center of the front of the neckband of a shirt and to be held in place thereat. Parallel rearwardly and forwardly downwardly depending tie panels are carried by the band section, with the forwardly disposed downwardly depending tie panel being untied and presenting an entirely unbroken and completely unobscured outer surface. A spacer means is disposed immediately below the band section and in contact with the rearward side of the forwardly disposed downwardly depending tie panel for influencing the latter outwardly with respect to the forward side of the parallel and rearwardly disposed downwardly depending tie panel. A pair of oppositely disposed aligned headed pins extend through and transversely of, the edges of the forwardly disposed downwardly depending tie panel at positions which are immediately below the aforementioned spacer means; and a connector block is disposed between the inner ends of the headed pins and adapted to firmly receive the same, said headed pins being otherwise unconnected.

3,761,964

NECKTIE AND TIE KNOT FORM THEREFOR

John Mark Piper, St. Petersburg, Fla., assignor to Samuel Baruch, Clearwater, Fla.

Filed June 21, 1972, Ser. No. 264,773
Int. Cl. A41d *25/08*
U.S. Cl. 2—153 **9 Claims**

A necktie having a simulated knot includes a contoured form for providing the knot wherein the simulated knot is formed directly from the necktie itself in cooperation with the contoured form, the necktie being fastened about the form along the contours of the outer surface thereof so as to directly form the simulated knot from the necktie. The form preferably comprises an arcuate member having a contoured inner surface concave portion and a substantially parallel contoured convex outer surface portion, the form tapering from each end to the center thereof so as to form a single continuous symmetrically tapered concave channel for the inner surface portion and a symmetrically tapered contoured arcuate convex portion for the outer surface portion. The form may be a single contoured member around which the body of the tie is secured by a single stitch or may be a pair of nesting geometri-

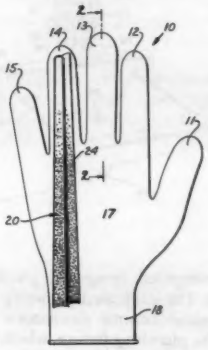
cally similar forms to which the tie is secured by means of a removable slide fastener. In the latter case, the location of the form may be readily varied along the length of the tie so as to alter the location of the simulated knot.

3,761,965

SEAMLESS PLASTIC ARTICLES HAVING A TEXTURED SURFACE

Werner Barasch, Los Gatos, Calif., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed June 19, 1972, Ser. No. 263,771
Int. Cl. A41d *19/00*
U.S. Cl. 2—167 **6 Claims**



Impermeable relatively thin resin film having a granular textured surface which is adapted to be made into articles such as surgeons' gloves is disclosed. The films are made from liquid dispersions of vinyl chloride polymers in a suitable plasticizer. The liquid dispersion or plastisol is applied to a suitable form to provide film of the resin dispersion thereon. The resin film is heat set and has applied thereto in a non-uniform distribution particles of a granular vinyl chloride polymer which becomes embedded therein, then the film is heat cured thereby forming a film having a granular textured surface.

3,761,966

TROUSERS

Werner Augustin, Holsteinstrasse 8, Krefeld, Germany

Filed Nov. 9, 1971, Ser. No. 197,109
Claims priority, application Germany, Nov. 11, 1970, P 20 55 383.7
Int. Cl. A41f *9/00*
U.S. Cl. 2—236 **2 Claims**

A pair of trousers having a waist band made up of a composite outer band with an outermost layer and a stiffening in-

sert layer, and an inner lining band. The composite outer band and inner lining band are each folded downward around a waist margin and upward around a leg margin. The two bands are secured together along their top and bottom edges by

seams. The seam along the waist margins of the bands extends through the folded portion only of the outer band to provide a concealed seam. The seam along the leg margins extends through the folded portions of both bands and an interposed portion of garment fabric to provide a visible seam.

3,761,967

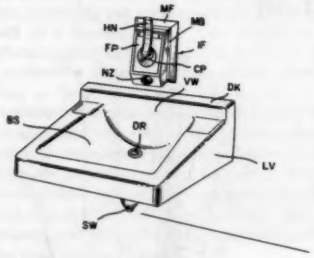
INTEGRATED PLUMBING FITTING

Joseph W. Owings, Smithfield, Tex., assignor to American Standard Inc., New York, N.Y.

Filed Mar. 12, 1971, Ser. No. 123,648

Int. Cl. E03c *1/042*, *1/044*; A47k *4/00*

U.S. Cl. 4—192 **1 Claim**



Involves an integrated composite plumbing fitting for a plumbing fixture. The integrated plumbing fitting includes all of the normal water control mechanism and is physically separated from the plumbing fixture, which may be a lavatory, with which the composite fitting is to be associated. The composite fitting includes two input water pipes, one for hot water and the other one for cold water, both connected to a mixing valve which may be controlled by a single lever. The integrated fitting also includes two stop valves, associated respectively with the two input water pipes, for closing either or both of the pipes whenever repairs or replacements or investigations are to be made. The integrated fitting also includes an exposed spout-end for discharging a stream of water received from a common outlet of the mixing valve. The integrated fitting also includes a case or housing, which may be made of metallic or plastic materials, and the entire structure is mounted in or against the wall above the plumbing fixture, namely, the lavatory. By manipulating the lever, hot or cold water, or a mixture thereof, may be fed through the spout-end from an elevated position above the basin of the lavatory, and the water may be accumulated in the basin and later released through the drain of the lavatory to the sewer system. The integrated fitting is arranged so that the conduits are closely coupled together by removable clips and all of the parts of the structure may be readily assembled or disassembled. The plumbing fixture itself has no water control mechanism, all of such mechanism being confined to the integrated fitting structure.

3,761,968

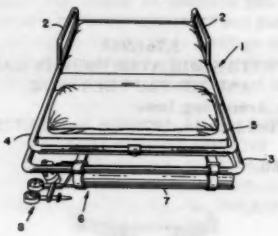
OXYGEN BOTTLE CARRIER PARTICULARLY FOR STRETCHERS

Herbert C. Besler, R.F.D. Rt. 1, Cambridge, Nebr.

Filed July 17, 1972, Ser. No. 272,638

Int. Cl. A61g *7/02*

U.S. Cl. 5—92 **11 Claims**



An oxygen bottle carrier, particularly for ambulance stretchers, is adapted to be mounted on the framework of the stretcher beneath the head by adjustable brackets, the adjustability of the brackets facilitating use of the bottle carrier with different sized stretchers. The bottle is inserted and replaced through an open end of the cradle structure of the carrier, and a trigger controlled latch normally prevents removal of the bottle, while permitting protrusion of the bottle neck and associated gauges and regulators. The carrier, including a bottle carried therein, lies substantially within the boundaries of the stretcher in unused space beneath the head, thus being out of the way while still readily accessible.

3,761,969

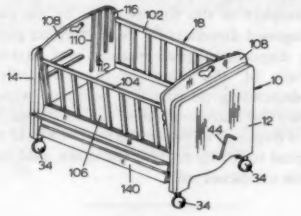
ARTICLE OF FURNITURE

James R. Meade, 51 Byberry Ave., Hatboro, Pa.

Filed Mar. 10, 1972, Ser. No. 233,416

Int. Cl. A47d *9/02*, *7/01*

U.S. Cl. 5—108 **26 Claims**



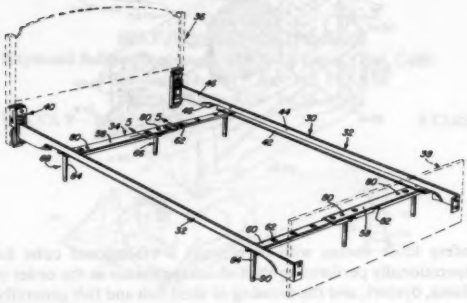
An article of furniture of the swinging type including a base frame having head members at opposite ends between which a pair of U-shaped torsion suspending members extends to suspend a supporting unit adapted to receive one or more persons either in sitting or lying conditions. Various parts of the article of furniture are adjustable to adapt the same for use by children as well as adults. The legs of the U-shaped suspending members normally extend outwardly from each other at the outer ends thereof an appreciably greater distance than when said ends are pivotally connected to bearings in the head members of the base frame, whereby the suspending members are placed under compression type torsion to minimize and/or prevent appreciable longitudinal movement of the lower portions of the suspending members as well as the supporting unit connected thereto relative to the head members of the base frame.

3,761,970

ADJUSTABLE BED CARRIAGE WITH ADAPTER UNIT

Harry Fredman, 908 S.W. Washington St., Peoria, Ill.

Filed Dec. 29, 1971, Ser. No. 213,312
Int. Cl. A47c *19/04*
U.S. Cl. 5—181 16 Claims



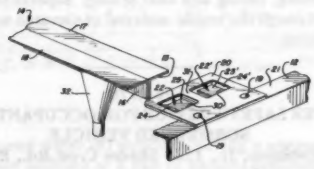
A bed carriage in the form of a four-legged or two-legged frame that is adjustable to a predetermined width for twin, double and queen size bedding and incorporates structure which will automatically lock the frame in each of the three predetermined width positions and hold the side rails snugly against the bedding with the inwardly extending flanges on the side rails in underlying supporting engagement with the bedding.

3,761,971

CENTRAL RAIL BED FRAME WITH CONNECTOR ASSEMBLY

Wilbert E. Behnke, Chicago, Ill., assignor to Harris-Hub Company

Filed June 14, 1972, Ser. No. 262,607
Int. Cl. A47c *19/00*
U.S. Cl. 5—201 14 Claims



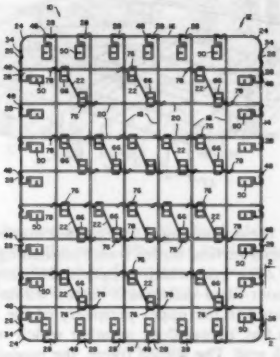
An improved bed frame assembly including a pair of parallel side rails and a pair of end cross rails extending perpendicularly between the side rails also includes a central support rail extending parallel to the side rails and midway of the cross rails. The central rail is T-shaped in cross section, having a vertical leg and a pair of horizontal legs extending outwardly from the top of the vertical leg. At least one end of the central rail is connected to a cross rail by means of a plate secured to the midportion of the cross rail. The plate includes a pair of opposed protruding fingers extending horizontally below the plate, and having opposed ends spaced from each other. The fingers define a T-shaped space into which an end of the central rail is inserted, so that an end of each horizontal leg of the central rail is held between a respective finger and the plate, for a positive connection between the central rail and the cross member.

3,761,972

WIRE MAT ASSEMBLY FOR A BOX SPRING

Edward J. Bihun, Huron, Ohio, and Michael Castello, Detroit, Mich., assignors to Van Dresser Corporation, Detroit, Mich.

Filed Dec. 20, 1971, Ser. No. 209,755
Int. Cl. A47c *23/02*
U.S. Cl. 5—247 15 Claims



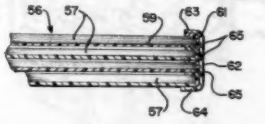
A wire mat assembly particularly adapted for use in a box spring and composed of formed wire members positively connected together by integral formations providing mechanical interlocks.

3,761,973

PLASTIC BACK ABSORPTION PAD SHEET ASSEMBLY

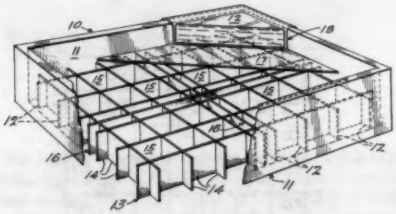
Ruth Lee Leventhal, 440 E. 57th St., New York, N.Y.

Filed July 2, 1971, Ser. No. 159,294
Int. Cl. A61g *7/02*; A47g *9/00*
U.S. Cl. 5—335 1 Claim



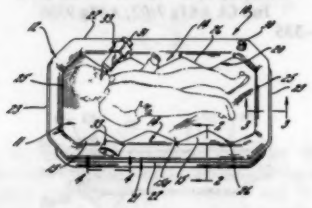
A plastic back absorbtion pad sheet assembly adapted for use upon beds to overlie mattresses and sheets of the bed which can be disposed of when becoming soiled and which will prevent the soiling of the bed sheets and mattress. A stack of these assemblies is provided and the assemblies held in place in stack relation by the heat sealing together of rolled over edges of the backing sheet but permitting detachment of the assemblies when removing a soiled one from the others. This stack of absorbtion pad sheet assemblies can be assembled upon the mattress by means of a large bottom underlayer sheet which can be tucked in at the sides of the mattress or upon a contour sheet which is automatically tucked in by the elastic pull corners when placed over the corners of a mattress. The underlying support sheets for the stack assemblies can also be secured to side edges of a contour sheet by snap fastening elements. The assemblies can be arranged in row fashion with perforations separating one sheet assembly from the other which renders the same easy for one assembly to be torn away from the other assemblies. A device is provided for supporting the roll of assemblies on a bed including a casing and a turn wheel on the end of the casing for turning the roller of assemblies.

3,761,974
WATER MATTRESS SUPPORT
Ralph L. Kuss, Findlay, Ohio, assignor to R. L. Kuss & Co., Inc., Findlay, Ohio
Filed Sept. 13, 1971, Ser. No. 179,725
Int. Cl. A47c 27/08
U.S. Cl. 5—348 WB **4 Claims**



A support for containing a water-filled mattress. The support comprises a vertical walled frame containing a free-standing modular deck grid which supports the water-filled mattress. The water-filled mattress is nested within a vinyl liner weich is secured to the upper periphery of the walled frame and covers a flat, planar floor member which rests upon the modular deck grid. The walled frame, the modular deck grid, and the floor member provide means for containing and distributing the weight of the water-filled mattress uniformly across the entire area of the support.

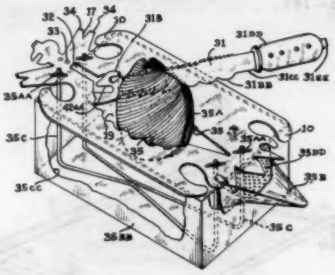
3,761,975
INFANT REST PAD
Bernell E. Personett, 3703 Peterson Ct., Rockford, Ill.
Filed Apr. 12, 1972, Ser. No. 243,163
Int. Cl. A47c 27/08
U.S. Cl. 5—348 **5 Claims**



Generally rectangular sheets of plastic vinyl are heat-sealed together to form a pad with a resilient cushion defined by an inflatable chamber which extends around a central rest area. When inflated, the chamber forms a plurality of lobes with interposed air pockets around the periphery of the pad. The lobes extend toward the center of the rest area and act in effect as ramps which direct a rolling infant back toward the center of the rest area. The pockets provide air spaces to keep the infant from rolling tightly up against the wall of the chamber and possibly smothering.

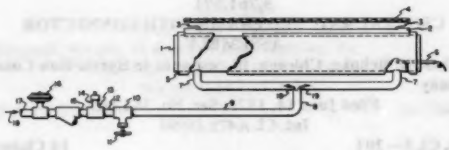
3,761,976
LINE HOLDER-CUTTER HAND TOOL, SELECTIVE GUAGE AND SHELL-SHUCKING MEANS, IN COMBINATION
Paul M. D'Amico, 2709 S. 12th St., Philadephia, Pa.
Continuation-in-part of Ser. No. 828,072, May 1, 1969, Pat. No. 3,596,300. This application July 6, 1971, Ser. No. 125,339
Int. Cl. B26b 11/00; B67b 7/44; B25f 1/00
U.S. Cl. 7—14.25 **2 Claims**

The present invention relates to improvement and innovations in a line storing, bailing, lacing bobbin and line cutting means; additionally and suitably performing as a multi-purpose and selective hand tool and guage means, including means for engaging and disengaging a related multi-purpose



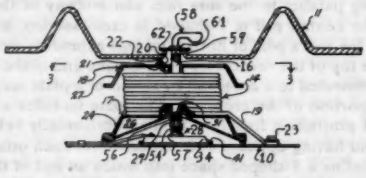
safety knife means with or without a extensional cube for operationally performing shell-shucking means in the order of clams, oysters, and the dressing of shell-fish and fish generally; both in marine and field.

3,761,977
PROCESS AND APPARATUS FOR TREATMENT OF TEXTILE MATERIALS
Seymour F. Rappoport, 688 Queen Anne Rd., Teaneck, N.J.
Filed Sept. 17, 1971, Ser. No. 181,383
Int. Cl. D06c 1/00
U.S. Cl. 8—149.3 **5 Claims**



A process and apparatus is disclosed for effecting the treatment of textile and textile-like materials such as drying, steaming, extracting, curing and heat setting. Superheated steam is directed through the textile material at elevated temperatures and pressures.

3,761,978
WATER SAFETY DEVICE FOR OCCUPANTS OF A SUBMERGED VEHICLE
Hugh J. Robinson, Jr., 1133 Shades Crest Rd., Birmingham, Ala.
Filed Oct. 4, 1972, Ser. No. 294,847
Int. Cl. B63c 7/26
U.S. Cl. 9—9 **10 Claims**



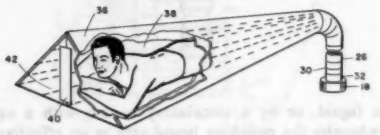
A releasable assembly is detachably connected to a spare wheel having a buoyant tire and to the chassis of a vehicle with

positive release means for releasing said spare wheel and the assembly carried thereby. A flexible line is carried by the releasable assembly with one end of the line secured to the assembly and the other end thereof anchored to the chassis. Positive release means also releases any trunk lid or cover for the spare wheel. A pouch carrying survival items is also provided.

3,761,979
SELF-INFLATING LIFE RAFT

Raymond S. Daughenbaugh, 860 S. La Luna, Ojai, Calif.

Filed Aug. 23, 1971, Ser. No. 173,938
Int. Cl. B63c *9/04*; B63b *7/08*
U.S. Cl. 9—11 A **4 Claims**



A chambered tetrahedron shaped life raft in which the walls are formed of a series of inflatable flexible tubes. The raft is provided with a weighted air scoop and filling sleeve; thus when deployed from an aircraft, the tubes are inflated by air passing through the scoop and into the filling sleeve. Upon landing in the ocean, the weighted air scoop along with the sleeve sinks below the water surface and prevents loss of air as well as carrying out the functions of an anchor. The raft which will float on one side provides a large open chamber into which people may wait for rescue.

3,761,980
WATER SKI STRUCTURE

Burton P. Silverstein, Forest Sherman Elem. School, U.S. Naval Support Activity, Box 31, Fleet Post Office, New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,345
Int. Cl. A63c *15/00*
U.S. Cl. 9—310 A **10 Claims**

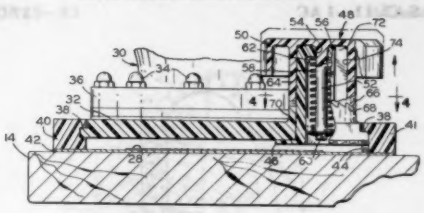
An improved water ski structure having a conventional ski body with the addition of a pair of parallel depending rails on the lower ski surface defining a central channel therebetween. The forward portions of the rails are of a constant depth and merge at the forward end into the upwardly curved front end of the ski, and the rear portions of the rails are provided with a plurality of short sequential inclined planes having a progressively greater angle of inclination toward the rear end of the ski; the planes being inclined forwardly and upwardly to provide greater lifting power for the ski.

3,761,981
WATER SKI BINDING

Devern C. Frisbey, Portland, Oreg., assignor to Western Wood Mfg. Co., Portland, Oreg.

Filed Feb. 9, 1972, Ser. No. 224,690
Int. Cl. A63c *15/06*
U.S. Cl. 9—310 AA **4 Claims**

A handknob mounted on a heel plate and splined to a pinion meshing with a rack is permitted to rotate in one direction by a ratchet mechanism to permit the heel plate to be moved forwardly along the rack, and the hand-knob and pinion are normally prevented from rotation in the opposite direction by the

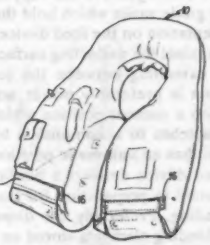


ratchet mechanism to prevent the heel plate from moving rearwardly along the rack. When the knob is manually lifted, the ratchet mechanism is disengaged to permit the heel plate to be moved rearwardly along the rack.

3,761,982
LIFEJACKET

James Mitchell Hawkins, Ashton-under-Lyne, Lancashire, England, assignor to Beaufort (Air-Sea) Equipment Limited, England

Filed Nov. 1, 1971, Ser. No. 194,227
Claims priority, application Great Britain, Mar. 11, 1971, 6,638/71
Int. Cl. B63c *9/14*
U.S. Cl. 9–342 **8 Claims**



There is disclosed an inflatable portion for a life-jacket, for example of the type intended for use by aviators, which includes an outer envelope and an inner bladder, the envelope comprising at least one extendable part which extends when there is a given differential between the pressure inside and outside the inflatable portion to increase the envelope volume and thereby limit the pressure differential.

In one embodiment which is disclosed the extendable part consists of an elastic panel, for instance a panel fabricated from elastic yarn.

In other embodiments the outer envelope has at least one flap which may be folded against another portion of the envelope and there releasably secured to form an extendable part which when unsecured provides increased envelope volume.

By using such inflatable portions the disadvantageous effects of ambient conditions tending to increase the pressure differential are avoided without loss of gas therefrom.

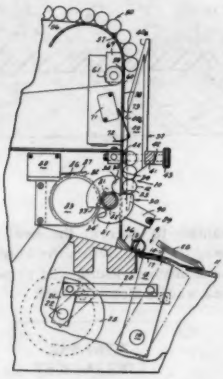
Also disclosed is the application of the same principle to life-saving appliances in general, and to cases where the use of an envelope is dispensed with.

3,761,983

BINDING APPARATUS

Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed Mar. 17, 1972, Ser. No. 235,561
Int. Cl. B42c *3/00*; B65d *83/00*
U.S. Cl. 11—1 AC **27 Claims**



A binding apparatus having a binding mechanism including a binding support for supporting a plastic type binding having a backbone with a plurality of curled fingers extending therefrom which fingers are uncurled during a binding operation characterized by a dispensing device for inserting a binding on the support after completion of the binding operation and prior to the next binding operation. The dispensing device includes a feed device having a plurality of rotating cam members which hold a binding above the support and cooperates with one or more guide vanes which hold the binding element in the correct orientation on the feed device which injects the binding element against the deflecting surface into the support with the fingers extending between the teeth thereof. The binding mechanism is preferably power actuated and has a control circuit with a manual position which requires actuation of various switches to accomplish a binding operation. The control circuit has an automatic position in which the initiation of the feed device delivers a binding to the support which is then opened in preparation for inserting perforated sheets on the binding. Preferably the dispensing device includes supplying binding elements stored on a releasable tape to a peeling device which peels the bindings above the rotating cams which peeled binding elements are guided by the guide vane to the cams sequentially.

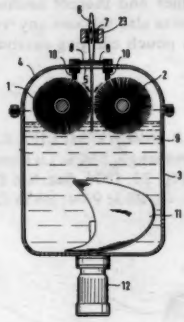
3,761,984

CUTLERY POLISHING MACHINE

Willi Hauschild, Schillerstrasse 22, Feldkirchen, Germany, and Hans Hauschild, deceased, late of Marienstrasse 11, Neuwied, Germany (by Dorothea Hauschild, heiress)

Filed May 19, 1971, Ser. No. 144,788
Claims priority, application Germany, May 19, 1970, P 20 24 379.2
Int. Cl. A46b *13/04*
U.S. Cl. 15—21 D **13 Claims**

A machine for polishing workpieces such as cutlery and other small articles, where the polishing roller, or rollers, are enclosed inside a container holding the polishing mixture in the form of a low-viscosity liquid, and the workpieces held by a reciprocating work frame are introduced from above through a restricted opening to the work area on the roller periphery. The polishing liquid is kept in constant agitation and continuously fed to the rollers either by the rollers dipping



into the liquid, or by a circulatory system with a squeeze pump, whereby the polishing liquid acts as an effective coolant.

3,761,985

CLEANING DEVICE FOR PRODUCING AND APPLYING A CLEANSING FOAM

Gunter Leifheit, Nassau/Lahn, Germany, assignor to Leifheit International Gunter Leifheit KG, Nassau/Lahn, Germany

Filed Sept. 13, 1971, Ser. No. 179,969
Claims priority, application Germany, Sept. 12, 1970, P 20 45 176.7
Int. Cl. A47l *11/34*
U.S. Cl. 15—50 C **21 Claims**

A housing can be moved over a surface to be cleaned and contains a reservoir for a foamable cleaning liquid which is received by foaming means by which it is foamed and then applied to the surface. The liquid is supplied to the foaming means by a float accommodated in the reservoir and having an outlet via which the latter communicates with the foaming means.

3,761,986

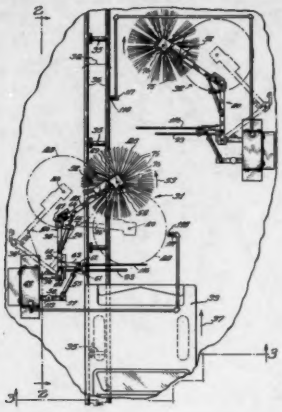
VEHICLE WASHING APPARATUS

Allen D. Rickel, Deerfield, Ill., assignor to Trans-Clean, Inc., Glenview, Ill.

Filed Aug. 14, 1967, Ser. No. 660,369
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **13 Claims**

Vehicle washing apparatus having a vertical brush mounted on an extensible-retractable double pivoted frame for following and washing front, side, and rear surfaces of the vehicle. The brush extends below and above the vehicle and has a plurality of vertical rows of relatively limp, pliant bristles. It is rotated with the direction in which the vehicle is moving within a predetermined rotational speed range to provide a unique operational action causing the brush to conform to the profile of the vehicle. Aerial sensing means are provided for shutting off the brush motor momentarily to prevent damage

to aerials, and override means are provided to prevent the vehicle upper body structure from shutting off the brush motor by contact with the aerial sensing means. A multiplicity



of vertical rows of short, relatively stiff, resilient bristles are preferably interspersed with the rows of limp, pliant bristles in the brush to provide a cushioning core for the brush.

3,761,987

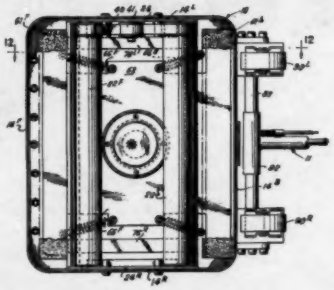
FLOOR SURFACE CLEANING AND POLISHING MACHINE

James E. Nayfa, 1209 Levee St., Dallas, Tex., and Andrew D. Stanley, 2306 Cedar Way Dr., Dallas, Tex.

Filed May 28, 1971, Ser. No. 147,866

Int. Cl. A47l *11/03*

U.S. Cl. 15—50 R **9 Claims**



A self-propelled machine includes a main housing supported on front and rear drive rollers and has an operator control handle extending from the rear. Front and rear elongated working brushes are driven in orbital movement in horizontal planes, with the front brush being positioned ahead of the front roller and the rear brush positioned behind the rear roller. A supply tank for the working solution includes agitating and aerating means for creating a foam dispensed from a pressurized tank through a flow control gate, and applied to the floor surface ahead of the front brush. The drive rollers act as squeegees; and vacuum pickup nozzles adjacent each of the drive rollers pickup excess material from the floor surface which is collected in a collection tank.

3,761,988

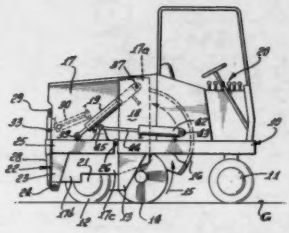
REAR DUMP MECHANISMS FOR ROAD SWEEPERS

Billy Joe Overton, Lake Arrowhead, Calif., assignor to Wayne Manufacturing Company, Pomona, Calif.

Filed Feb. 24, 1972, Ser. No. 228,928

Int. Cl. E01h *1/04*

U.S. Cl. 15—83 **6 Claims**



A container positioned at the rear of a road sweeper vehicle to receive debris displaced rearwardly of the vehicle, is mounted in normal overlying relation to the vehicle rear wheel axle and is carrier-supported for rear dump door opening and tilted elevation by hydraulic cylinders through two lift stages, the carrier being pivoted to the vehicle and having bell crank characteristics permitting extended container elevation by hydraulic actuation.

3,761,989

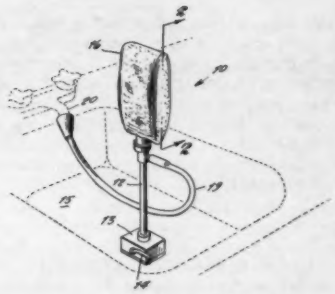
HAND AND ARM WASHER

Ralph E. Gore, 673 Armstrong Ave., Mansfield, Ohio

Filed Jan. 19, 1972, Ser. No. 218,865

Int. Cl. A47k *7/06*

U.S. Cl. 15—104.92 **4 Claims**



A fixture for assisting a disabled or one-armed person to wash his hand or arm in an easy and convenient manner; the device consisting of an upstanding post attachable by a vacuum cup in a wash bowl basin, the upper end of the post supporting a plastic form over which a bag of terry wash cloth or towel is fitted, the form having an opening vertically therethrough, the opening lower end being connected to a hose connected to the wash bowl faucet, so that water can flow outward of the terry cloth bag so the person can rub his arm or hand thereagainst during the washing operation.

3,761,990

CORNER BRUSH

David Lynn, 1725 Santa Cruz, Menlo Park, Calif.

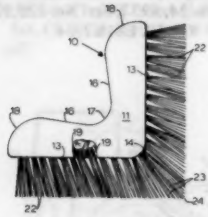
Filed Sept. 30, 1971, Ser. No. 185,267

Int. Cl. A46b *5/02, 9/02*

U.S. Cl. 15—160 **2 Claims**

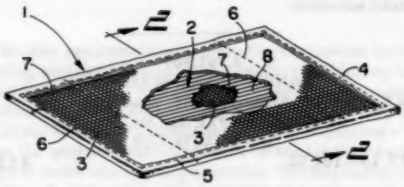
Household-type cleaning brush has a handle which is generally L-shaped. The inner edges and corners are curved in

such manner as to fit the hand conveniently for many different uses. The exterior edges are straight except that the corner is



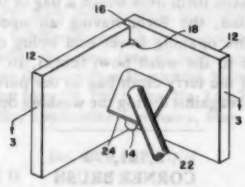
rounded and provided with bristles which slant toward the corner. Bristles adjacent the corner are longer so that the outer ends of the bristles completely fill the outline of a right angle.

3,761,991
SCRUBBING OR BUFFING DEVICE
Theron V. Moss, 3175 Falmouth Rd., Shaker Heights, Ohio
Filed Mar. 30, 1971, Ser. No. 129,468
Int. Cl. A47l *13/16*
U.S. Cl. 15—209 R **9 Claims**



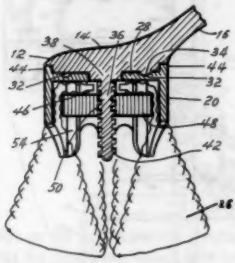
A device for scrubbing and/or buffing surfaces comprising an inner layer or pad of absorbent material having an open scrim covering which protects the absorbent material from wear and linting off during use and allows dirt and cleaning fluid to pass freely through the scrim covering for absorption by the absorbent material. The scrim covering may extend over one or both sides of the absorbent material, and may also be made in the form of a boot for placement around a conventional dust mop and the like.

3,761,992
CORNER CAULKING TOOL
Joseph W. Schneller, Williamsville, N.Y., assignor to National Gypsum Company, Buffalo, N.Y.
Filed Aug. 6, 1971, Ser. No. 169,726
Int. Cl. E04g *21/17*
U.S. Cl. 15—210 R **4 Claims**



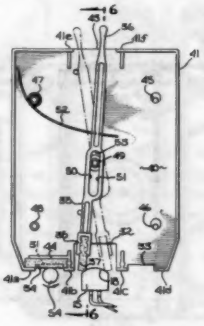
A hand tool including a handle and a working head, the head being essentially a thick, flat square piece of rubber like material with one corner affixed to the handle and an opposite corner, slightly rounded, directed away from the handle.

3,761,993
SCRUBBING TOOL HAVING ROTABLE CONTACT ELEMENT
Kyung H. Kim, 1226 S. Fourth St., Terre Haute, Ind.
Filed May 30, 1972, Ser. No. 258,070
Int. Cl. A47l *17/08*
U.S. Cl. 15—209 AH **3 Claims**



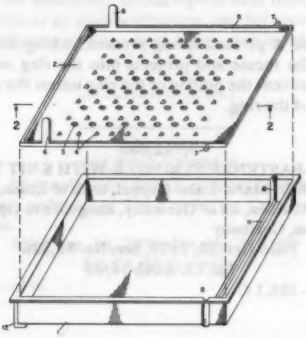
A scrubbing tool is comprised of a base, tubular extension, and contact element in which the tubular extension and contact element are rotable in relation to the base. By rotating the contact element, the wear on the contact element can be distributed more evenly, and hence, the useful life of the scrubbing tool can be extended.

3,761,994
MAGNETIC TAPE HEAD CLEANING APPARATUS
Andrew B. Becht, 2013 N. Rose St., Burbank, Calif.
Filed Feb. 1, 1972, Ser. No. 222,535
Int. Cl. G11b *5/40*
U.S. Cl. 15—210 R **8 Claims**



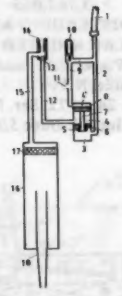
The present invention is a device used to clean the magnetic tape head of a magnetic tape recording/playback unit incorporating the use of cartridge mounted magnetic tape. A housing of substantially the same shape and size of a magnetic tape cartridge is adapted to be inserted within the cartridge receiving aperture of the magnetic tape playback/recording unit. A spring biased arm is disposed within the housing. A cleaning portion for contacting the magnetic tape head extends from one end of the housing; a portion for adjusting the position of the arm extends from the end of the housing which is accessible from the exterior of the magnetic tape playback/recording unit. Three dimensional, spring biased movement of the cleaning portion of the mounted arm provides for full contact with the magnetic tape head and permits cleaning thereof.

3,761,995
PAINT TRAY
James F. Rinard, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Feb. 9, 1972, Ser. No. 224,738
Int. Cl. B44d 3/12
U.S. Cl. 15—257.06 2 Claims



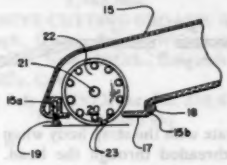
An improved apparatus for applying paint or other coating material to a roller for application to a substrate comprising a tray and a perforated follower plate adapted to fit snugly within the tray and having a plurality of protuberances on its surface to engage the nap of a paint roller and assure that the same will rotate as it is passed over the surface of the plate to be wetted with the coating material.

3,761,996
SUCTION DEVICE
Peter Tell, Akersberga, Sweden, assignor to Aktiebolaget Piab, Danderyd, Sweden
Filed Mar. 10, 1971, Ser. No. 122,984
Claims priority, application Sweden, Mar. 20, 1970, 3804/70
Int. Cl. A47l 5/18
U.S. Cl. 15—350 5 Claims



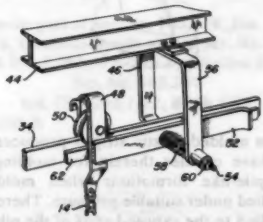
A suction device in the shape of an easily handled pen-shaped tool for collecting and keeping small particles and other objects. The suction is generated by an ejector comprised in the tool. The suction is started by closing an outflow opening for air under pressure supplied to the tool said closing bringing about the opening of a valve through the displacement of a piston, said valve and said piston being located in a common cylindrical chamber.

3,761,997
VACUUM CLEANER
John P. Frazier, 3660 Harbison Ave., Pittsburgh, Pa.
Filed May 26, 1971, Ser. No. 146,883
Int. Cl. A47l 9/02
U.S. Cl. 15—422 2 Claims



A cleaning tool or pick-up head for use with a vacuum sweeper, such as an electric vacuum broom, is adapted for connection to the suction tube or hose of a vacuum cleaner. The head is provided with a free-rolling, hollow, floor-engaging roller that is constructed to minimize frictional resistance to hand-operated movement along a rug and the like, while at the same time, to assure a maximized suction pick-up action of dust, etc., through a floor-engaging nozzle of the head. The cylindrical roller is of hollow or cagelike construction, in order that the dirt may be drawn upwardly therethrough, enabling its positioning substantially centrally within the entry mouth of the housing nozzle.

3,761,998
SHACKLE TENSIONING DEVICE
William C. Schmidt, Cincinnati, Ohio, assignor to The Cincinnati Butchers Supply Company, Cincinnati, Ohio
Filed Oct. 18, 1971, Ser. No. 190,105
Int. Cl. A22b 5/00
U.S. Cl. 17—24 22 Claims



In an automated meat processing plant, the invention consists in automatically holding in tension a shackle applied to one leg of a stunned meat animal, while the animal moves from the stunning station to a bleeding rail, so that the shackle may not slacken and detach itself accidentally from the animal's leg and thereby expose an attendant to uncontrolled dangerous leg reflexes of the stunned animal.

3,761,999
CABLE STRAP WITH MULTIPLE TOOTH PAWL
Thomas Edward Morgan, Cleveland Heights, Ohio, assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 20, 1971, Ser. No. 209,921
Int. Cl. B65d 63/00
U.S. Cl. 24—16 PB 5 Claims

The cable strap or tie disclosed has an elongated, unitary, flexible plastic strap body with an enlarged head at one end. A

transverse opening in the head allows the strap body or tongue to be threaded through the opening in the head to clamp a bundle of wires or the like within the loop so formed. At the head end the tongue terminates in an integral flexible pawl disposed in the passage through the head opening. The pawl has adjacent to its free end a plurality of stub end ratchet teeth

positioned to mate with the strap body when the tongue of the cable strap is threaded through the head. The pawl has a tapered body leading to the tooth alignment. The alignment of teeth may include two, three or four teeth, the most remote tooth terminating a distance below the plane of the top of the head by at least one tooth spacing.

3,762,000

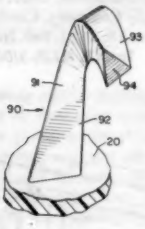
PRODUCTION OF A CONTINUOUS MOLDED PLASTIC STRIP

Marvin Menzin, 879B Lexington St., Waltham; John H. Blanz, 18 Willow St., Concord; Andrew C. Harvey, 334 Beacon St., Boston, and Sang Soon Rhee, 1 High Pine Ave., Burlington, all of Mass.

Division of Ser. No. 824,597, May 14, 1969, abandoned. This application Nov. 11, 1971, Ser. No. 198,003

Int. Cl. A44b *17/00*

U.S. Cl. 24—204 **7 Claims**



A continuous molded plastic strip is produced using mold plates which have cavities therein for molding upstanding members or pile-like formations when moldable plastic material is applied under suitable pressure. Thereafter, plastic material is applied to the exposed ends of the pile-like formations while still in the cavities and a strip constituting a base member is formed having the pile-like protuberances integrally attached.

In addition to the apparatus a special method is proposed for producing the upstanding formations or members integrally attached to the base member.

Certain related products are also proposed including a special form of hook member.

3,762,001

LINE RELEASE

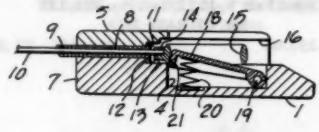
John A. Gaylord, Greenbrae, Calif., assignor to H. Koch & Sons, Inc., a division of Global Systems, a Gulf and Western Company, Marin County, Calif.

Filed Feb. 22, 1972, Ser. No. 228,057

Int. Cl. A44b *19/00*

U.S. Cl. 24—230 A **2 Claims**

This line release is particularly adapted for pulling a releasing line connected to the actuator of a survival kit, has a base which is adapted to be sewn or fixedly secured to one of the straps of a parachute harness, and has a hole through which the actuating line is inserted. The line is secured to a ring in an open recess in the base engageable by a finger to pull the line



for actuation. A pivoted spring pressed locking disk is in the bottom of the recess and projects into the ring so as to obstruct and prevent the pulling of the ring unless the disk is first pushed out of the ring.

3,762,002

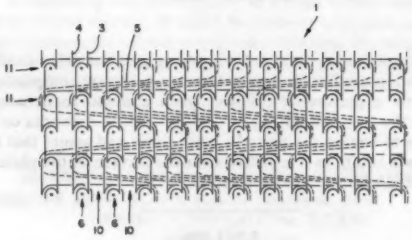
SLIDE-FASTENER STRINGER WITH KNIT TAPE

Alfons Frohlich; Marie-Luise Cappel, both of Essen, and Ernst Stubiger, Giessen, all of Germany, assignors to Opti-Holding AG, Glarus, Germany

Filed Oct. 20, 1970, Ser. No. 82,326

Int. Cl. A44b *19/40*

U.S. Cl. 24—205.1 C **7 Claims**



A warp-knit support tape is formed with relatively bulky yarns along at least one of its edges. A coil-type coupling element is laid on the smooth reverse side of the tape and stitches pass between the turns of this coil and through the fabric between the wales thereof so that they fill a valley between wales on the front fabric side. The stitch length is greater than the course width and should be equal to an integral multiple of this width, e.g. twice the course width.

3,762,003

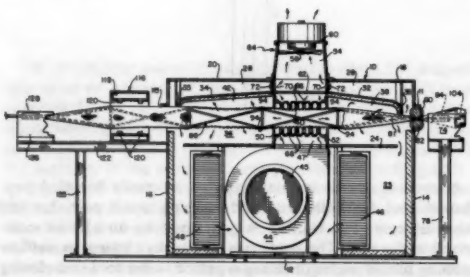
APPARATUS FOR DISTENDING AND HEAT-TREATING TUBULAR KNITTED FABRIC

Robert Frezza, Carle Place, N.Y., assignor to Semcoe Holding Corporation, Woodside, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,277

Int. Cl. D06c *5/00*

U.S. Cl. 26—56 **7 Claims**



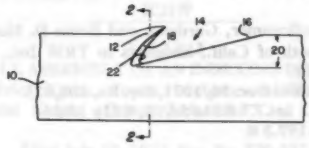
Apparatus is provided for heat treating knitted fabric in tubular form, particularly synthetics in a manner whereby con-

tact marks or lines on the internal surfaces of such fabric are substantially avoided by the utilization of a frame configuration for the spreader therefor which eliminates continuous horizontal contact with the internal surface of the fabric during treatment with a spreader; the spreader comprised of a series of criss-cross connected frames which present only a series of sequential contact areas against the internal surface of the fabric. In addition, cooling means are provided in combination with the heat treating apparatus for defining the end of the heat treating zone. Also included herewith is an arrangement for selectively delivering the heat treated fabric in a tubular form or an open width form, and for accommodating either a pre-dyeing step or a post-dyeing step in tubular form.

3,762,004
FELTING NEEDLE

Richard W. Shepard, and Albert S. Ashmead, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Jan. 14, 1972, Ser. No. 217,887
Int. Cl. D04h *18/00*
U.S. Cl. 28—4 N **5 Claims**

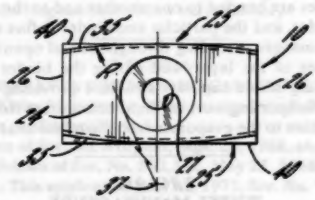


A felting needle is disclosed in which the barb grooves have a rounded roof and a flat throat thereby providing a stronger needle blade for a given fiber capacity. The groove configuration permits economies in the manufacture and maintenance of tooling.

3,762,005
INDEXABLE CUTTING INSERT

Donald S. Erkfritz, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Continuation-in-part of Ser. No. 67,949, Aug. 28, 1970, Pat. No. 3,694,876. This application July 19, 1971, Ser. No. 163,952
Int. Cl. B26d *1/00, 1/12*
U.S. Cl. 29—95 R **3 Claims**

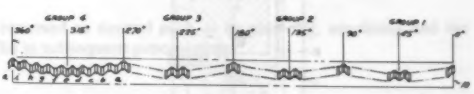


An indexable cutting insert with a central screw-receiving hole is formed with four convexly curved cutting faces defined by the bottoms of grooves extending along the narrower edge surfaces of the insert and on opposite sides of flat intervening lands for locating the insert in a precise position relative to a cutter body. As a result of the location and profile of the cutting faces, the insert possesses high compressive strength and is capable of making fine finishing cuts.

3,762,006
PROGRESSIVE CUTTING BROACH WAFERS

Richard W. Tersch, Grosse Pointe Woods, and Stewart F. Miller, Mt. Clemens, both of Mich., assignors to Lear Siegler Inc., Santa Monica, Calif.

Filed July 11, 1972, Ser. No. 270,677
Int. Cl. B26d *1/00*
U.S. Cl. 29—95.1 R **12 Claims**

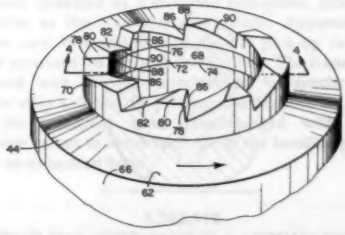


A rigid broach ring for assembly with a multiplicity of similar broach rings to form a pot broach, in which the teeth of the broach ring are arranged so that not all of the teeth initiate their cut on the work piece simultaneously. Preferably, the teeth are provided into two or more groups spaced symmetrically about the ring with the teeth in each group stepped axially of the ring so as to come into initial cutting contact with the work sequentially.

3,762,007
ROTARY HOLLOW MILLING CUTTER

Paul A. Dion, and Paul O. Hagarman, both of North Attleboro, Mass., assignors to Polymetallurgical Corp., Attleboro, Mass.

Continuation-in-part of Ser. No. 103,518, Jan. 4, 1971, Pat. No. 3,714,701, Continuation-in-part of Ser. No. 104,701, Jan. 7, 1971, Pat. No. 3,702,497. This application Jan. 11, 1971, Ser. No. 105,237
Int. Cl. B26d *1/12*; B23b *5/00*
U.S. Cl. 29—103 R **7 Claims**



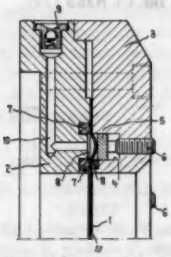
A rotary hollow milling cutter for removing the peripheral surface of a moving length of round metal rod. The milling cutter is used to cut away the contaminated surface of a core rod to prepare it for the subsequent solid-phase bonding thereto of a cladding sheath to produce a clad rod. All the contiguous central edges of the cutter teeth are cutting edges and no portion of the rod is exposed to the atmosphere after being cut by the teeth.

3,762,008

CLAMPING DEVICE FOR AN INTERNALLY SEPARATING CIRCULAR SAW BLADE

Walter Volki, Thun, and Alfred Stauffer, Steffisburg, both of Switzerland, assignors to Machinenfabrik Meyer & Burger AG, Canton of Berne, Switzerland

Filed July 9, 1971, Ser. No. 161,198
Claims priority, application Switzerland, Aug. 7, 1970, 11917/70
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 4 Claims



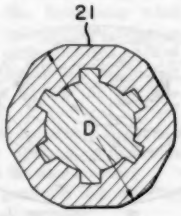
A clamping device for an internally separating circular saw blade comprising means for clamping the outer edge of the saw blade and an annular fluid-tight pressure chamber having a peripheral edge portion located intermediate the clamped edge portions of the blade and substantially adjacent the blade, said pressure chamber being adapted to receive a fluid medium under pressure such that at least a portion of the blade of the saw is displaced thereby out of its axial plane.

3,762,009

METHOD OF PRODUCING SPLINE BEARINGS

Hiroshi Teramachi, 34-8 Higashitamagawa 2-chome, Setagaya-ku, Tokyo, Japan

Filed June 14, 1971, Ser. No. 152,900
Claims priority, application Japan, July 3, 1970, 45/57727
Int. Cl. B23p *1/00*
U.S. Cl. 29—149.5 R 2 Claims



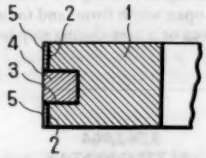
A method of producing spline bearings for transmitting a rotational torque in which one member or a spline shaft produced by cutting and grinding is used as a core which is placed in the other member or a metallic mold adapted to mold by casting an outer race of a spline bearing. A molten alloy is poured in the cavity of the metallic mold in the form of the outer race of the spline bearing and allowed to cool and solidify so as to mold the outer race by casting. After being molded, the outer race is uniformly beaten to form a small clearance between the shaft and the outer race, so that a spline bearing of high precision can be produced.

3,762,010

PISTON RING AND MANUFACTURE THEREOF

Kouichi Iizuka, Kamio-City, Japan, assignor to Nippon Piston Ring Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 62,347, Aug. 10, 1970, Pat. No. 3,661,402.
This application Feb. 7, 1972, Ser. No. 223,886
Claims priority, application Japan, Aug. 15, 1969, 44/64209
Int. Cl. B23p *15/06*
U.S. Cl. 29—156.6 3 Claims



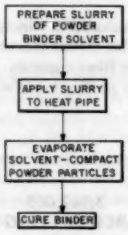
A piston ring with a highly wear-resistant sliding surface of tungsten-cobalt electrodeposit and a sliding ring of a sintered mixture of iron oxide and carbon powder.

3,762,011

METHOD OF FABRICATING A CAPILLARY HEAT PIPE WICK

Karl P. Staudhammer, Gardena, and Bruce D. Marcus, Los Angeles, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 16, 1971, Ser. No. 208,825
Int. Cl. B21d *53/02*; B21p *15/26*
U.S. Cl. 29—157.3 R 2 Claims


PREPARE SLURRY OF POWDER BINDER SOLVENT
APPLY SLURRY TO HEAT PIPE
EVAPORATE SOLVENT—COMPACT POWDER PARTICLES
CURE BINDER

A conformal capillary wick for a heat pipe is fabricated by preparing a slurry composed of an organic solvent containing an organic binder in solution and powder particles of relatively high thermal conductivity in suspension; applying a layer of the slurry to the inner wall surface of the heat pipe casing, evaporating the solvent from the layer to recover the binder and utilize the surface tension forces of the binder to draw the particles together into a highly compacted condition wherein the particles are bonded to one another and to the casing wall by the binder, and the particles and binder define a myriad of capillary passages extending throughout and opening through the surfaces of the layer; and curing the binder to form a dimensionally stable capillary structure providing a capillary wick for transporting working fluid condensate from the condenser section to the evaporator section of the heat pipe.

3,762,012

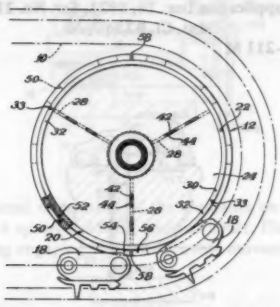
WHEEL MANUFACTURE

Ludwig E. Aker, Hamilton, Ontario, Canada, assignor to International Harvester Company, Chicago, Ill.

Filed Aug. 1, 1972, Ser. No. 276,985
Int. Cl. B21d *53/26*; B21k *1/28, 1/42*
U.S. Cl. 29—159 R 4 Claims

A disk wheel with concealed spokes, having a hub and a wheel rim and primarily intended as a front idler for the track

of crawler vehicles. Fabrication is by the steps of: providing a sub-assembly of a plurality of uniplanar spokes, radially positioned between and securing together the hub and rim; providing and positioning wheel disks on the sub-assembly, so provided with rows of radially oriented plug weld slots, and so op-



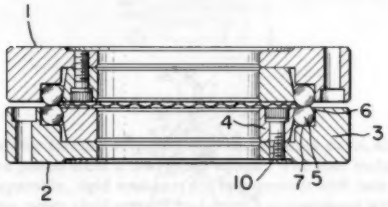
positely positioned to one another, and upon opposite sides of the spokes, that the slots register with the radial edges of the spokes; and bonding-on the disks by plug welding same, in the slots, to the spokes and by bead welding same, on the peripheries, to the hub and rim.

3,762,013

BALL ASSEMBLY OF AN INDEXING DEVICE

Minoru Irie, Kyoto, Japan, assignor to Shinpo Kogyo Kabushiki Kaisha (Shinpo Industrial Co., Ltd.), Kyoto, Japan

Filed July 10, 1972, Ser. No. 270,332
Claims priority, application Japan, July 8, 1971, 46/50497
Int. Cl. B23p *19/00, 19/04*
U.S. Cl. 29—200 P **1 Claim**



A ring member of high hardness and a ring member of low hardness are combined. A row of balls as indexing elements are forcibly fitted between the two ring members. Basic surfaces are provided on the side of the ring member of high hardness. Indentations due to the forced fitting of the balls are created on the ring member of low hardness only.

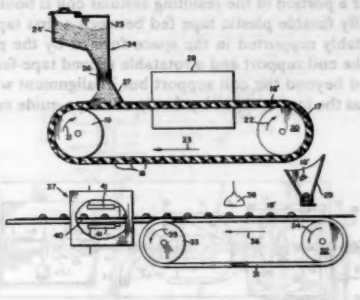
3,762,014

APPARATUS FOR MAKING CAPACITORS

Gerhart P. Klein, Manchester, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Continuation of Ser. No. 810,405, Sept. 23, 1968, abandoned, which is a division of Ser. No. 552,312, May 23, 1966, Pat. No. 3,422,515. This application Jan. 22, 1971, Ser. No. 108,940
Int. Cl. H01r
U.S. Cl. 29—203 **8 Claims**

An apparatus for fabricating anode preforms adapted for use in devices capable of performing an electrical function. The apparatus includes means for dispensing an admixture of film-forming metal powder and a freezeable compatible bonding agent, means for freezing dispensed admixture in a cavity to provide a frozen preform and means for removing the frozen preform from the cavity. The preform can be further



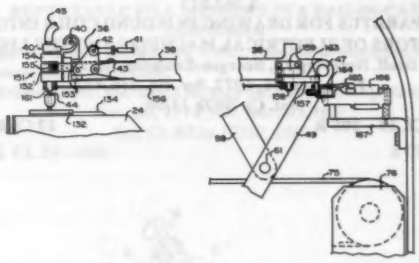
processed as desired such as by sintering, anodizing and the like in subsequent process steps.

3,762,015

DIE BONDER APPARATUS

William Radobenko, Scottsdale, Ariz., assignor to Automated Equipment Corp., Phoenix, Ariz.

Filed Jan. 17, 1972, Ser. No. 218,135
Int. Cl. H05k *13/00*
U.S. Cl. 29—203 V **4 Claims**



A high speed, reliable die bonder is provided for picking up dice from a loading position and transporting them to a bonding position and for thermocompression bonding the dice to a transistor strip. A low-inertia, straight-line reciprocating ram mechanism operated by a modified sine-curve, motor-driven cam serves as the transport mechanism. Apparatus driven from the cam lifts and lowers the die pick-up mechanism, which is mounted on the ram mechanism. The transistor strip is indexed with the ram mechamism to synchronize the transistor strip with the die pick-up and die bonding. An oscillatory die transport head synchronized with the ram mechanism serves to scrub each die at the bonding position to provide an enhanced bond.

3,762,016

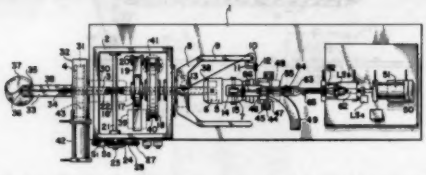
METHOD FOR CONTINUOUSLY AUTOMATICALLY FORMING COILS AND BINDING EACH ANNULAR COIL WITH A THERMALLY FUSABLE PLASTIC TAPE

Iwao Ishida, Aichi-ken, Japan, assignor to Ginga Electric Industrial Co., Ltd., Mie-Ken, Japan

Filed July 19, 1971, Ser. No. 163,748
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 R **7 Claims**

Coils each being bound with a plastic tape, especially those coils for use in motors of small capacities may be produced continuously automatically at a low cost by the use of an ap-

paratus arranged to be operative so that first a conductive wire fed from a rotating flyer is wound around a bifurcated coil support unrotatably coupled to a power-driven shaft, and thereafter a portion of the resulting annular coil is bound with a thermally fusable plastic tape fed between a first tape-feed reel rotatably supported in the space formed by the parallel arms of the coil support and a rotatable second tape-feed reel positioned beyond the coil support but in alignment with the first reel as the tape is urged by the tip of a tape-guide member



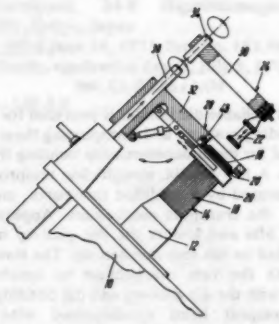
of one of a pair of vertical nipping arms of a binding means, and thereafter the resulting superposed portions of the tape are fused together and at the same time thermally cut into two independent continuous ribbons of tape by a heater provided at the said tip. All of the foregoing performances are controlled in sequential relation to each other by a control means comprising a pressure fluid circuitry and an electromagnetic circuitry for sequentially actuating the former circuitry which is operatively associated with the respective movable parts.

3,762,017

APPARATUS FOR DRAWING IN WOUND COILS INTO STATORS OF ELECTRICAL MACHINES AND THE LIKE

Hans Droll, Nordring 75, Boergen-Enkheim, Germany

Filed Apr. 21, 1972, Ser. No. 246,422
Int. Cl. H02k *15/06*
U.S. Cl. 29—205 R **12 Claims**



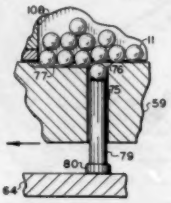
An apparatus for drawing wound coils into the grooves of stators or the like. A stator support member is provided for holding the stator, positioning the same onto the circle of guide fingers and, after the wound coils have been inserted into the grooves of the stator, removing the stator and removing it laterally away from the circle of guide fingers to a withdrawn position at which the stator is arranged with its axis vertical and then released onto a conveyer, mandrel or the like. An alignment member is also mounted for movement between a withdrawn position away from the circle of guide fingers and an operative position on the axis of the guide fingers and movable between them to precisely position them as the wound coils are being drawn into the stator grooves.

3,762,018

APPARATUS FOR ASSEMBLING PARTICLES

Russell H. Romney, Salt Lake City, Utah, assignor to Bio-Logics, Inc., Salt Lake City, Utah

Division of Ser. No. 880,631, Nov. 28, 1969, abandoned, and a continuation of Ser. No. 781,387, Dec. 5, 1968, abandoned.
This application Dec. 20, 1971, Ser. No. 217,693
Int. Cl. B23q *7/10*
U.S. Cl. 29—211 M **3 Claims**



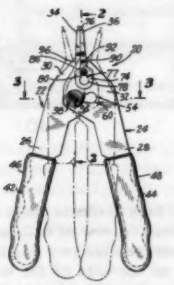
Apparatus for assembling and inserting data-representing particles into a light permeable identification device, which apparatus comprises part of a system particularly adapted for hospital use, including primary and secondary identification devices, structure for the transfer of data from primary to secondary identification devices and an opto-electronic reader for communicating data from identification devices to data processing equipment.

3,762,019

CONVERTIBLE PLIER-TYPE TOOL

Harry Epstein, Seaford, N.Y., assignor to Kastar, Inc., Bellport, N.Y.

Filed May 20, 1971, Ser. No. 145,344
Int. Cl. B23p *19/04*
U.S. Cl. 29—229 **10 Claims**



Plier-type tool convertible between a crossed handle and a simple pivoted handle configuration having replaceable jaw tips enabling a simple squeezing motion of the handles to be selectively utilized to expand or contract the tips for use, for example, with internal or external spring retaining rings.

3,762,020

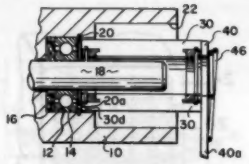
SNAP RING TOOL

Emile P. Plouffe, Solon, Ohio

Filed Sept. 1, 1971, Ser. No. 177,006
Int. Cl. B23p *19/04*
U.S. Cl. 29—229 **10 Claims**

A snap ring removal and installation tool includes a pair of elongated semi-tubular elements mounted on a bearing and retainer ring with a pair of snap ring engaging pins on one end

and a pair of handles on the other end. The semi-tubular members are designated to provide a gap between them to allow



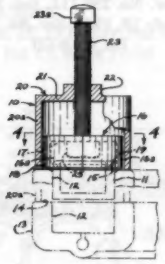
limited rotational movement of the elements on the bearing and retainer. A spring holds the handles apart. The movement of the snap ring engaging pins is an arcuate movement.

3,762,021

TOOL FOR RELEASING FROZEN WORK PARTS

George Racin, Akron, Ohio, assignor to Michael Racin and Donald A. Reynolds, Akron, Ohio

Filed Sept. 21, 1970, Ser. No. 73,749
Int. Cl. B23p *19/04*
U.S. Cl. 29—263 **10 Claims**



A tool for forcibly releasing interlocked work parts, such as a frozen piston from a disc-brake caliper. The tool includes a first, separable, rigid tool part for engagement with one work part, one-piece rigid,second tool part in engagement with the other work part, and a connector means connected between the first and second tool parts and including screw means for axially adjusting the first and second tool parts toward one another to separate the interlocked work parts.

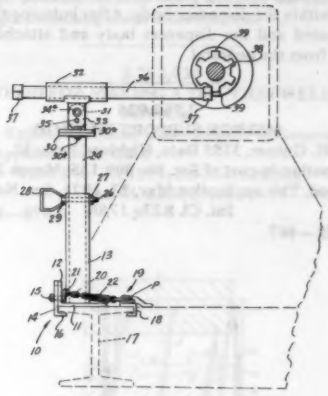
3,762,022

IMPACT TOOL

Andrus Le Jeune, 718 Louisiana St., Lake Arthur, La.

Filed June 9, 1972, Ser. No. 261,525
Int. Cl. B23p *19/06*
U.S. Cl. 29—275 **6 Claims**

An impact tool for tightening and loosening nuts forming a part of a piece of machinery. The tool consists of a base releasably clamped to the frame member of the machine and having a tubular standard extending upwardly therefrom and having a plurality of vertically spaced retained pin bores extending therethrough. A telescoping member is mounted in the standard and similarly has a plurality of vertically spaced retainer pin bores. A sleeve is secured to the top of the telescoping member by means of a transverse horizontal pivot and by a swivel mechanism having a vertical axis, and an impact tool is slidably mounted in the sleeve for movement in a generally horizontal direction when struck with a hammer. The impact tool is adjusted so that the sliding impact member engages one of the bosses on a nut to be tightened or loosened, and the member is then struck with a hammer to apply an im-



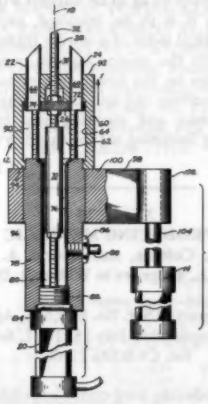
pact to the nut to either loosen the nut or tighten the nut as required. With the nut tightened or loosened as required, the impact tool is removed from the frame until it is again needed.

3,762,023

METHOD FOR OBTAINING A PREDETERMINED AND REPEATABLE FILL MEASURE IN A BAG-IN-CAN DISPENSER

Roger K. Bruce, Costa Mesa, Calif., assignor to Sterigard Company, Santa Ana, Calif.

Division of Ser. No. 846,136, July 30, 1969. This application Nov. 26, 1971, Ser. No. 202,700
Int. Cl. B23p *17/00, 19/04*
U.S. Cl. 29—400 **3 Claims**



A flexible bag is attached to a dispenser body by stretching the mouth of the bag over the outside of one end of the body in direct tension contact therewith. The bag is pulled up the outside of the body by a vacuum as it is being drawn into the hollow interior of the dispenser body by the vacuum until the bottom of the bag indexes itself against an inverted V-shaped bag indexer. The vacuum is applied through the indexer during indexing of the bag therewith to arch-shaped sides of the bag developed during the drawing of the bag into the body.

The bag indexer is withdrawn into a pedestal onto which the dispenser is placed prior to the attachment step. The pedestal is approximated to a bag applicator which attaches the mouth of the bag to the dispenser body. After the dispenser body is on the pedestal the bag indexer is extended to its indexing position within the dispenser body. After indexing the vacuum is terminated and the dispenser body and attached bag are removed from the pedestal.

3,762,024

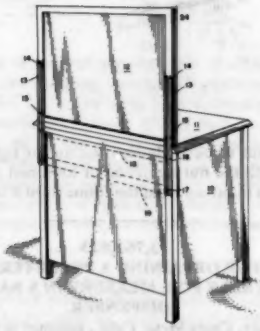
MIRROR SUPPORT METHOD

Kenneth H. Gutner, 3285 Dato, Highland Park, Ill.

Continuation-in-part of Ser. No. 809,135, March 21, 1969, abandoned. This application Mar. 23, 1971, Ser. No. 127,164

Int. Cl. B23q *17/00*

U.S. Cl. 29—407 **3 Claims**



A method of installing elongated unitary brackets each having a centrally disposed, longitudinally extending rib and laterally extending flanges and screw openings spaced along its length, each bracket further having a scribing line at a predetermined position so as to be aligned with the bottom of a mirror on which it is to be installed, securing a pair of brackets to the vertical sides of a mirror frame with the scribing line aligned with the mirror bottom, positioning certain preselected openings on the lower side of said line in alignment with the supporting rail and the parting rail of the mirror-supporting dresser and securing said brackets to said dresser by installing fastening means through said preselected openings.

3,762,025

METHOD FOR PRODUCING METALLIC FILAMENTS

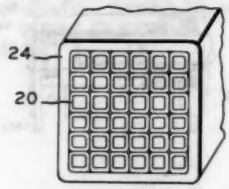
Arnold J. Gottlieb, Colonia, and George A. Majesko, Glen Ridge, both of N.J., assignors to Wilbur B. Driver Company, Newark, N.J.

Continuation-in-part of Ser. No. 820,556, April 30, 1969, abandoned. This application July 15, 1971, Ser. No. 162,989

Int. Cl. B23p *17/00*

U.S. Cl. 29—419 **3 Claims**

A process for producing long continuous lengths of metallic filaments is disclosed which process comprises securing four flat plates of a first metal to each of the elongated sides of a billet of a second metal and having a cross section in shape of a rectangle, by edge welding each of the plates. The resulting assembly is essentially void free. The rectangular cross section of the billet is reduced while being elongated by hot rolling. The resulting elongated rectangular structure, having a core of the second metal and a cladding of the first metal over the elongated sides, is divided into a plurality of elements of the same lengths. The elements are inserted into a hollow metal tube open at both ends having a rectangular cross section in a manner to essentially eliminate the voids and with their longitudinal axes and the longitudinal axis of the tube essentially parallel. Ends of the tube are sealed and the sealed unit is



reduced in cross section and elongated by hot rolling. The other materials are removed from the resulting filaments of the first metal yielding materials suitable for weaving into metal cloth.

3,762,026

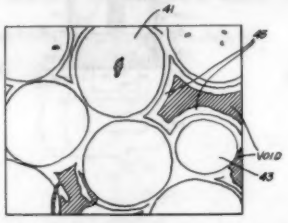
METHOD OF MAKING A HIGH TEMPERATURE BODY OF UNIFORM POROSITY

Zalman M. Shapiro, Pittsburgh, Pa., assignor to Nuclear Materials and Equipment Corporation, Apollo, Pa.

Continuation of Ser. No. 250,112, Jan. 8, 1963, abandoned. Filed July 29, 1968, Ser. No. 751,680

Int. Cl. B22f

U.S. Cl. 29—420 **9 Claims**



A method of making a high temperature and stress resistant body of desired porosity in whose practice a green porous body (FIGS. 4, 5, 9, 10) of higher than the desired porosity is formed by compacting different size fractions of spherical particles (A, 23, 27 FIGS. 4, 5) or by winding fine cold-drawn wire (53 FIG. 9) or mesh of fine cold-drawn wire (73 FIG. 10) on a mandrel (51 FIG. 7; 71 FIG. 10). The green body is cemented into a rigid body and at the same time its porosity is decreased to the desired magnitude by depositing cementing material (H5 FIG. 11, 61 FIG. 9, 77 FIG. 10) in the pores (25 FIGS. 5 and 6; 55 FIG. 9) from a gas. Typically a body of tungsten is formed by reducing a tungsten halide in the pores with hydrogen.

3,762,027

METHOD OF POST-TENSIONING PRESTRESSED CONCRETE

Frederick W. Burtelson, Lombard, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

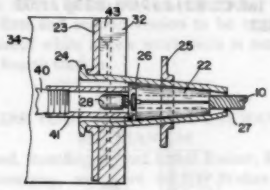
Filed May 18, 1970, Ser. No. 38,247

Int. Cl. B21d *39/00*

U.S. Cl. 29—452 **8 Claims**

A pre-cut length of cable and a dead anchor are preassembled and inspected to provide a cable and dead anchor as-

sembly for shipment to the job site. The assembly apparatus is a frame having a slot in one end wall to receive the assembly and a hydraulic cylinder having a tubular ram which pushes the jaw cluster of the anchor into the anchor shell to develop a permanent wedging engagement of the jaw cluster, cable and



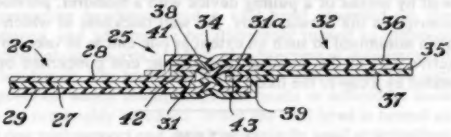
shell. The push force applied is less than that at which tooth deformation would occur which would cause material reduction of the holding power of the anchor during a later cable tensioning operation. After inspection of the jaw set, a cap is placed over the large end of the shell to prevent entry of the concrete mix.

3,762,028

JOINING OF PLASTIC/METAL FOIL LAMINATES

Charles C. Swearingen, Bay Village, and Nicholas Sheptak, Rocky River, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 25, 1972, Ser. No. 229,325
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **5 Claims**



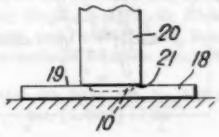
Plastic/metal foil laminates are joined by removing a portion of the plastic of the laminate by means of a wire brush applied within a critical range of surface speeds to remove a window of the plastic surface and two adjacent metal surfaces are joined together by conventional welding means.

3,762,029

MANUFACTURE OF SUPPORTS FOR SEMICONDUCTOR DEVICES

Sydney Jackson, Hayfield, and Joseph Bell Titterington, Burnley, both of England, assignors to Ferranti Limited, Lancashire, England

Continuation-in-part of Ser. No. 27,478, April 13, 1970, abandoned. This application June 12, 1972, Ser. No. 261,686
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **10 Claims**



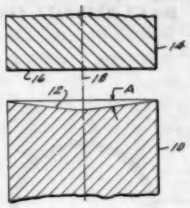
In manufacturing a support such as a lead frame for a semiconductor device, alloying material such as gold is selectively applied in sufficient thickness for the device bonding operation to a part only of a supporting member of the support, by impacting an initially-spherical particle of the alloying material onto the selected part by an unheated impacting tool, the particle possibly initially being secured on the selected part by slight impacting under a suction tool.

3,762,030

METHOD FOR MAKING A FRICTION WELDED ARTICLE

Ronald G. Rajala, Loveland, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 21, 1971, Ser. No. 210,386
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 **4 Claims**



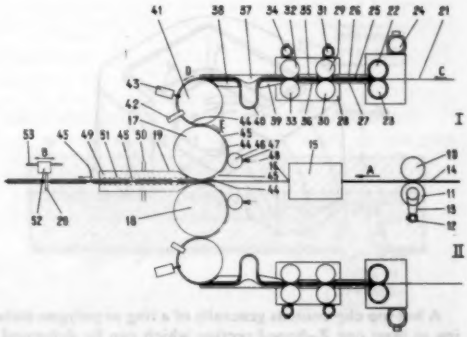
First and second metal components to be joined at opposed interface surfaces by friction welding, the first component having greater hot strength than the second component, are friction welded by first shaping the interface surface of the first higher hot strength component prior to friction welding so that initial contact during friction welding is at the peripheral areas of the contacting surfaces. In one form, such shaped surface is in the form of a depression concave into the first component. The walls of the depression are disposed at an angle in the range of about 1° – 10° in respect to a plane normal to the friction welding axis of rotation.

3,762,031

METHOD FOR MANUFACTURING ELONGATE HEAT-EXCHANGE ELEMENT BLANKS

Karl Gunnar Jonason; Karl Harry Karlsson, both of Vasteras, and Ake Gustof Vilhelm Remning, Finspang, all of Sweden, assignors to Granges Essen Aktiebolag, Vasteras, Sweden

Filed Feb. 4, 1971, Ser. No. 112,729
Claims priority, application Sweden, Feb. 5, 1970, 1499/70
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.3 **12 Claims**



A method and apparatus for manufacturing elongate heat-exchanger blanks composed of a basic substrate profile having

at least one length of corrugated metal foil strip mechanically bonded thereto. A basic elongate profile string is advanced at a predetermined speed along a fixed path and at least one strip corrugating device is arranged to produce a continuous length of corrugated strip and to feed the strip into the path of the basic profile via a number of corrugated strip cutting and feed means. These latter means operate cyclically to cut the strip at predetermined intervals and to join the cut lengths of strip to the basic profile string in spaced relationship at a frequency corresponding to the intervals.

3,762,032

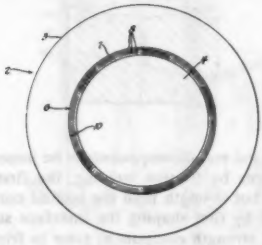
BONDING

Charles E. Bowling, Speedway, and George B. Meginnis, Indianapolis, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 19, 1971, Ser. No. 173,112

Int. Cl. B23k *5/22, 31/02*

U.S. Cl. 29—493 **9 Claims**



Controlled pressure is put onto workpieces which are being bonded by diffusion bonding, or other processes involving heating the workpiece, by a fixture which develops the pressure by differential thermal expansion between inner and outer members of the fixture.

3,762,033

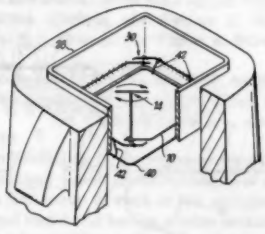
CLIP FOR SECURING HOT TOP LINING SLABS

Walter A. McCray, Berea, Ohio, assignor to Foseco International Limited, Birmingham, England

Continuation-in-part of Ser. No. 151,499, June 9, 1971. This application Feb. 2, 1972, Ser. No. 222,933

Int. Cl. B22d *7/10;* **B21d** *39/00*

U.S. Cl. 29—522 **5 Claims**



A hot top clip consists generally of a ring or polygon including at least one Z-shaped section which can be deformed to expand the ring or polygon. Attached to that ring or polygon there can be a second ring or polygon in plane substantially parallel to the first and of slightly larger size.

3,762,034

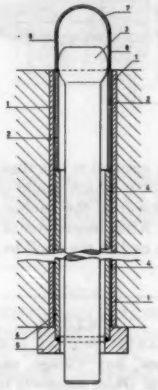
METHOD OF PLUGGING A PIPE OR BORE ACCESSIBLE OF ONE SIDE ONLY

Johannes E. Meijers, 's- Gravenhage, Netherlands, assignor to N. V. Neratoom, The Hague, Netherlands

Continuation of Ser. No. 832,152, June 11, 1969, abandoned. This application Mar. 10, 1972, Ser. No. 233,764

Int. Cl. B21d *39/00;* **B23p** *11/02*

U.S. Cl. 29—523 **1 Claim**



Method for plugging up the back end of a pipe or bore exclusively accessible via its front end with the aid of a tubular body brought into the pipe or bore and expanded against its wall by means of a pulling device with a mandrel, previously inserted in the tubular body, the wall thickness of which has been minimised to such an extent at one end as to take up the active part of the mandrel, the tubular end concerned being sealed by a cap or the like.

3,762,035

METHOD OF MACHINING WORK-PIECES ON OPPOSITE SIDE IN A MACHINE TOOL

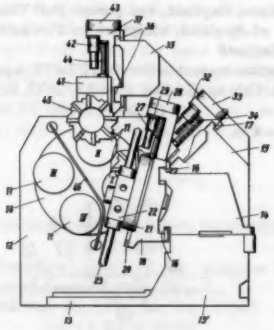
Alfred Ledergerber, and Hans Jacoby, both of Bielefeld, Germany

Division of Ser. No. 801,026, Feb. 20, 1969, Pat. No. 3,643,307. This application Dec. 17, 1971, Ser. No. 209,261

Claims priority, application Germany, Feb. 23, 1968, P 16 52 728.9

Int. Cl. B23p *13/00, 23/02*

U.S. Cl. 29—558 **9 Claims**



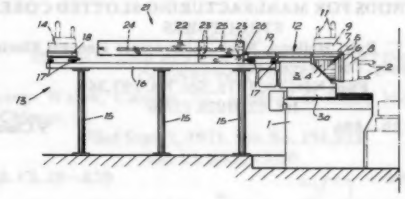
A method of machining workpieces on opposite sides in a four-spindle machine in which the workpieces are moved

along a circular path between a succession of four equidistant stations of which the first and second station comprise machining stations, in which a workpiece is mounted on a spindle at the fourth station preceding the first station, than indexed to the first and second station to be machined at one side at each of the stations, then indexed to the third station and removed from its spindle and mounted in reverse position on the spindle at the fourth station, whereafter it is again indexed to the first and second station to be machined on the other side thereof while a new workpiece is mounted on the spindle at the fourth station.

3,762,036
MACHINE TOOL WITH TOOL EXCHANGING MECHANISM

Hellmut Goebel, Reutlingen, and Ernst Raiser, Rommelsbach, both of Germany, assignors to BW-Weber Verwaltungsgesellschaft mit beschrankter Haftung, Reutlingen, Germany

Filed May 19, 1971, Ser. No. 144,737
Claims priority, application Germany, May 29, 1970, P 20 26 221.9; Dec. 4, 1970, P 20 59 688.7
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **17 Claims**



A tool exchanging mechanism for a machine tool having a reciprocating headstock and a tool head mounted on the headstock and adapted to be alternately turned to different positions about an axis of 45° to the direction of movement of the headstock. The tool head is provided with at least two tool supports on which multiple-spindle heads or individual tools may be removably mounted. When the tool head is turned so that one tool support and a multiple-spindle head or individual tool is in its working position in which it is movable by the headstock in the direction of movement of the latter and the tool or tools thereon carry out their work and are then returned, the other tool support is in its exchanging position at a right angle to the working position, or vice versa. In this exchanging position, a multiple-spindle head or an individual tool may therefore be exchanged for another during the period in which the headstock with another spindle head or individual tool in its working position carries out its working and return strokes. This tool exchanging mechanism preferably further comprises one or two separate magazines for a plurality of multiple-spindle heads and/or individual tools from which the next desired spindle head or tool may be selected and exchanged for a previously used spindle head or tool which is in the exchanging position of the respective tool support on the tool head.

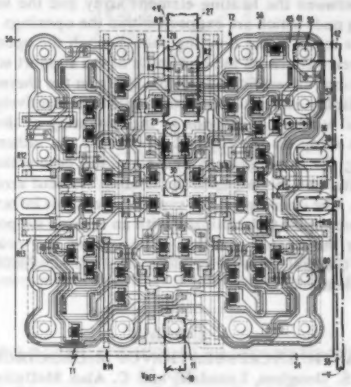
3,762,037
METHOD OF TESTING FOR THE OPERABILITY OF INTEGRATED SEMICONDUCTOR CIRCUITS HAVING A PLURALITY OF SEPARABLE CIRCUITS

Theodore H. Baker; Majid Ghafghaichi; Richard C. Stevens, all of Poughkeepsie, and Daniel Tuman, Beacon, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1971, Ser. No. 129,500
Int. Cl. B01j *17/00*
U.S. Cl. 29—574 **5 Claims**

A method for determining whether an integrated circuit chip containing a plurality of separable circuits is operable when one or more of the separable circuits is not functional.

A chip including a plurality of discrete or separable circuits, each of which include means for selectively receiving and distributing a voltage level necessary to render the particular circuit operable, the chip further including a region of one type conductivity at said voltage level common to all of the discrete circuits is tested by a method which will insure that short-circuits between a particular circuit found not to be functional and therefore not to be rendered operable and the common region will not inadvertently apply the voltage level from the



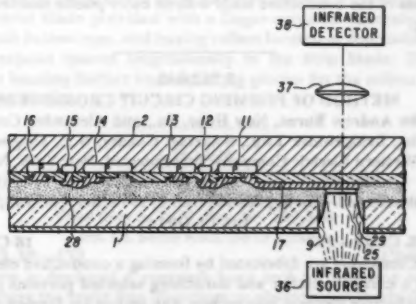
common region to voltage receiving and distribution means in the non-functional circuit.

All the discrete circuits are first tested to determine which are functional. Then those circuits which fail the functionality test are tested further to detect whether any of these failed circuits have electrical short-circuits between the common region and the means for receiving and distributing said operable voltage level in the failed circuit. If any of the failed circuits have such a short, the chip is considered to be inoperative because such a short will inadvertently connect the failed circuit with the functional circuits.

3,762,038
THERMAL DISPLAYS USING AIR ISOLATED INTEGRATED CIRCUITS AND METHODS OF MAKING SAME

Edward M. Ruggiero, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 650,821, July 3, 1967. This application Sept. 9, 1970, Ser. No. 70,742
Int. Cl. B01j *17/00*
U.S. Cl. 29—577 **8 Claims**



Thermal display including an air-isolated integrated semiconductor circuit having a semiconductor heating ele-

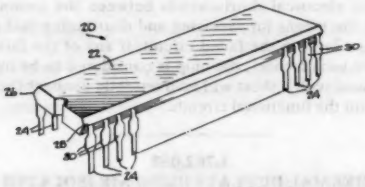
ment array joined by a metallic connecting pattern which expands out over the heating elements to interconnect selected ones of them and form bonding pads. The thermally sensitive material on which a dynamic display is formed or on which a permanent display is printed is in direct contact with the monocrystalline semiconductor material of the heating element array. Circuit elements are formed within the monocrystalline semiconductor material of the heating element array and are mounted face down on a support having openings therein so that the metallic connecting pattern extends between the heating element array and the support to bonding pads which are exposed within the openings. Connections are made to the bonding pads through the openings to a metallized pattern on the underside of the support so that the connections are sufficiently displaced from the thermally sensitive display material. A parting agent is selectively located over the bonding pads prior to the mounting of the heating element array on the support to prevent the adhesive from covering the bonding pads and allow the connections to be made after the mounting of the heating element array on the support. The openings in the support also allow infrared alignment techniques to be utilized with an opaque support for air isolating the heater elements of the array and provide improved thermal as well as electrical isolation between the heater elements.

3,762,039

PLASTIC ENCAPSULATION OF MICROCIRCUITS

Robert S. Douglass, Lansdale, and C. Alan McDulin, Devon, both of Pa., assignors to Mos Technology, Inc., Valley Forge, Pa.

Filed Sept. 10, 1971, Ser. No. 179,477
Int. Cl. B01j *17/00*; H01l *1/10*
U.S. Cl. 29—588 **11 Claims**



Microcircuits are encapsulated in a hermetic plastic package by enclosing the ends of conductive leads in an open cavity arranged to house the microcircuit and defined by an inner casing, then positioning a microcircuit in the open cavity and electrically connecting the ends of the conductive leads to the microcircuit, thereafter, covering the open cavity and defining a closed cavity about the microcircuit, and then completely encapsulating the inner casing and adjacent portions of the conductive leads with an outer plastic molded casing.

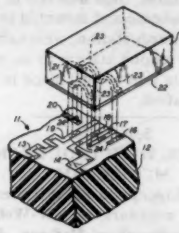
3,762,040

METHOD OF FORMING CIRCUIT CROSSOVERS

John Andrew Burns, New Hope, Pa., and Alexander Coucoulas, Bridgewater Twp., Somerset County, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 864,856, Oct. 8, 1969, abandoned. This application Oct. 6, 1971, Ser. No. 186,833
Int. Cl. G01r
U.S. Cl. 29—593 **18 Claims**

Crossovers are fabricated by forming a conductive element on a carrier member and deforming selected portions of the conductive element into arches. The arches are formed either prior to or during bonding so that after bonding the arches cross over any intervening circuit elements. The carrier member is associated with a backing member having slots at those portions of the conductive element which are to be formed into arches. Deformation of the conductive elements into the slots is employed to form the arches. An intermediate material can be used to separate the conductive element from



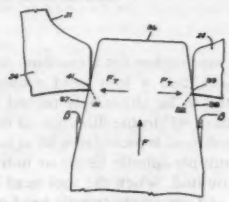
the circuit patterns at selected crossover points so that the conductive element is deformed into the slots during bonding. Or, the conductive elements can be deformed into the slots prior to bonding.

3,762,041

METHODS FOR MANUFACTURING SLOTTED CORE STRUCTURES

Eugene C. Bair, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Nov. 10, 1971, Ser. No. 197,269
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 **9 Claims**



Methods and apparatus for shaping restricted entrances of passageways in laminated magnetic cores and cores with preselected shaped surfaces. Apparatus includes core centering means, spline or rib means for orienting or aligning a slotted core and for gauging core slot entrances. Core slot entrance shaping means in the form of one or more tools is supported for radial movement relative to a core. Tools may be operated by hydraulic means to form lands along the entrance surfaces of wire admitting passageways of cores comprised of a plurality of juxtaposed laminations, at least some of which are at least slightly staggered or misaligned relative to one another. A preferred method includes gauging restricted slot entrances of a laminated core; relatively orienting slot entrances and shaping means; conforming the slot entrances to a preselected configuration; and separating the core and shaping means.

3,762,042

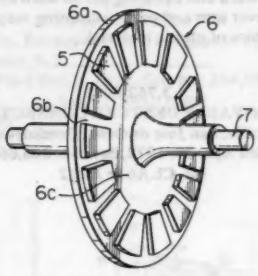
METHOD OF MANUFACTURING A CORE SEGMENT FOR A DISC TYPE INDUCTION MOTOR ROTOR

Michio Abe, Kasuga-shi, and Naoyuki Maeda, Inuyama-shi, both of Japan, assignors to Tokai Cold Forming Co., Ltd., Aichi-ken, Japan

Continuation-in-part of Ser. No. 773,738, Nov. 6, 1968, abandoned. This application June 17, 1971, Ser. No. 153,989
Int. Cl. H02k *15/02, 15/10*
U.S. Cl. 29—598 **4 Claims**

An electromagnetic pure iron blank is cut to a predetermined length and the blank is cold-formed to make a core seg-

ment for an induction motor rotor so that the crystal flow in the pure iron blank in a direction perpendicular to the planes of two parallel wedge-shaped faces of the segment is highly



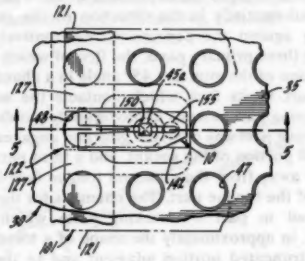
oriented at and around a larger outer face of the segment and is oriented only a little at and around the small inner face thereof.

3,762,043

METHOD AND APPARATUS FOR MOUNTING CONNECTOR CLIPS

George Walter, Chicago, Ill., assignor to Malco Mfg. Inc., Chicago, Ill.

Filed Sept. 1, 1971, Ser. No. 176,921
Int. Cl. H02g 15/00
U.S. Cl. 29—629 10 Claims



A method and apparatus for mounting connector clips on a connector assembly of the power plate type. A locator is positioned on the plate in bracketing relationship with the terminal post upon which the clip is to be seated and the plate aperture into which the clip feet are to be inserted. A driver forces the clip onto the post and inserts the clip feet into the aperture, camming the feet toward each other to facilitate such insertion.

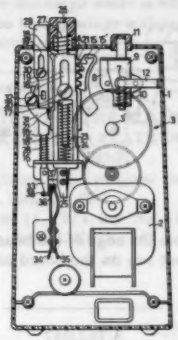
3,762,044

ELECTRIC CAN OPENER

Osamu Yamamoto, Nagoya, Japan, assignor to Kabushiki Kaisha Aichidenkikosakusho, Aichi-ken, Japan

Filed June 18, 1971, Ser. No. 154,495
Claims priority, application Japan, Apr. 1, 1971, 46/19801
Int. Cl. B67b 7/38
U.S. Cl. 30—4 R 3 Claims

An electric can opener provided with a cutter base held at its can opening position by the reaction force exerted on a cutter carried by said cutter base, in which the operation of the can opener is initiated by pushing a start push button and interrupted by lightly pushing a release push button, a can to be opened being still mounted on the can opener while the removal of the can from the can opener becomes possible by



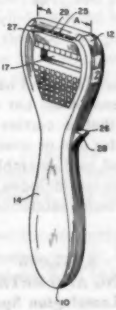
heavily pushing the release push button at the time of completion or interruption of the can opening operation.

3,762,045

SAFETY RAZOR WITH ROLLER MOUNTED STRIP BLADE

Arthur M. Fitzpatrick, Jr., 17 Copper Beech Rd., Greenwich, Conn.

Filed June 1, 1972, Ser. No. 258,499
Int. Cl. B26b 21/26
U.S. Cl. 30—40.1 9 Claims



A self-contained safety razor having a band or a continuous strip razor blade provided with a finger-actuated operator of the push button type, and having rollers located in depressions or apertures spaced longitudinally in the strip blade. The shaver housing further has a tracking groove for the rollers in the strip blade.

3,762,046

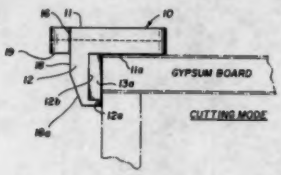
HAND TOOL FOR EDGING GYPSUM BOARD

Paul Kolomick, 9 Viking Rd., Glenwood Landing, N.Y.

Filed May 3, 1971, Ser. No. 139,538
Int. Cl. B08b 9/02; B67b 7/30
U.S. Cl. 30—172 7 Claims

There is disclosed a compact hand tool for squaring and smoothing the break line of gypsum or plasterboard in which a plurality of transverse coplanar cutting edges define recesses having a length exceeding the width of the board and having a predetermined depth to provide chambers for accumulating and discharging the powdered residue so that clogging is

prevented. The back side of the wall holding the cutting blades is formed with a shallow right-angle channel defining a slide for carrying a ruling gauge to position a scoring knife a precise



distance inward from the edge of the board so that the surface of the ruler does not rub on the board to obliterate its gauge marks.

3,762,047

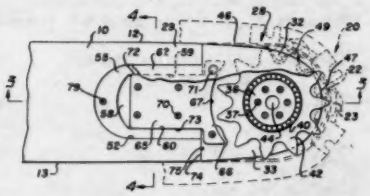
CUTTER BAR WITH SPEED TIP

Dennis G. Scott-Jackson, Burnaby, British Columbia, Canada, assignor to Windsor Machine Company Limited, British Columbia, Canada

Filed Feb. 7, 1972, Ser. No. 223,994

Int. Cl. B27b *17/04*

U.S. Cl. 30—385 **13 Claims**



A cutter bar for a chain saw and having a detachable nose assembly at the outer end of the bar which includes an idler sprocket so mounted that it carries the chain of the saw around the effective outer end or nose end of the bar clear of the side edges of this end, said assembly being no thicker than the guide bar. The cutter bar includes brace means for the assembly, and means for fixedly interconnecting these elements.

3,762,048

STEM CUTTING AND RETAINING TOOL

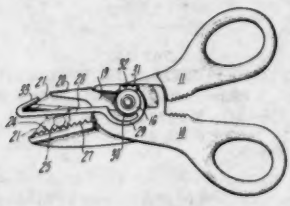
Ronald David Carter, Leamington Spa, England, assignor to The Stanley Works, New Britain, Conn.

Filed Apr. 7, 1971, Ser. No. 131,875

Claims priority, application Great Britain, June 29, 1970, 31,368/70

Int. Cl. B26b *17/04*

U.S. Cl. 30—124 **12 Claims**



A stem cutting and retaining tool particularly useful as a flower shear in which a pair of pivoted handles having shearing means at their forward ends including a blade, is provided with a cantilever arm extending along the blade, the cantilever arm being supported by a parti-coil spring secured at one end to the inner end of the cantilever arm and secured at its other end to the handle. The cantilever arm may be provided with a shield at its forward end covering the forward end of the blade and the cantilever arm and parti-coil spring may be formed as a unitary structure of plastic material.

3,762,049

REMOVABLE DENTURE CONNECTION

Arturo Gil-Castillo, San Jose de Ocoa, Dominican Republic

Filed Apr. 20, 1972, Ser. No. 246,064

Int. Cl. A61c *13/22*

U.S. Cl. 32—5 **12 Claims**

A removable artifical tooth (or teeth) and gum prothesis is attached to a pier tooth crown by means of a tapered tongue and groove connection. A spring in the tongue part of the connection is adapted to bear against depression in the wall of the groove or socket receiving the tongue part to form a dedent type connection. The spring includes a shank which extends away from the tongue portion in the direction of the gum into the gum prosthesis where it is embedded and at about a 45° angle relative to the face of the tongue. The inner part of the spring which engages the depression in the wall of the socket extends substantially in the direction of the gum and bears resiliently against the depression. Alternatively, the spring may have three primary parts, the first of which extends from the direction of the gum at a 45° angle in a channel within the tongue part to its face which contacts the socket wall, a second spring part extends approximately parallel to the face of the tongue part way from the gum and engages a depression in the wall portion of the socket, and a third part extends at a 45° angle away from the gum and tongue face into a further channel of the tongue part. The channels for the latter spring are formed in part by backing plate which is, at least originally, in approximately the shape of a truncated triangle with the truncated portion adajcent and to the rear of the second spring part so that the second spring part can resiliently move towards the truncated part. Such plate is soldered in place and a portion is thereafter removed whereby it defines in part the channels for the first and third spring parts.

3,762,050

PREFORMED UNIVERSAL ORTHODONTIC ARCH

Giorgio Dal Pont, Piazza Mazzini 19, Belluno, Italy

Filed May 1, 1972, Ser. No. 249,180

Claims priority, application Italy, May 3, 1971, 84124 A/71; May 15, 1971, 84129 A/71

Int. Cl. A61c *7/00*

U.S. Cl. 32—14 A **24 Claims**

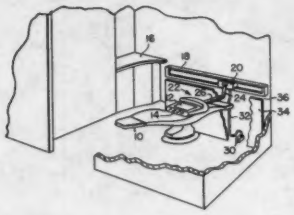
A preformed orthodontic arch made of a row of minor arches whose apices extend in the same general direction and

that are joined to each other by arch ends that are common to adjacent minor arches in the row. Each minor arch end is mounted in a tooth through the intermediary of a mounting member.

3,762,051
DENTAL APPARATUS

John J. Valeska, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,098
Int. Cl. A61c *19/02*
U.S. Cl. 32—22 **2 Claims**

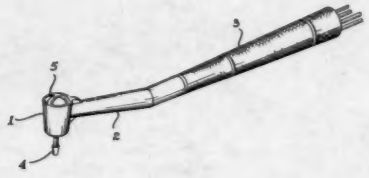


Disclosed is a dental apparatus including a dental unit, which is carried on one end of an articulated arm, the other end of the arm being movable along a horizontal track mounted to the wall of the dental operatory, whereby the unit is supported outwardly from the wall on the arm.

3,762,052
DENTIST DRILL

Chris R. Melde, 7755 Foothill Dr. South, Scottsdale, Ariz.

Filed Dec. 6, 1971, Ser. No. 205,125
Int. Cl. A61c *1/10*
U.S. Cl. 32—27 **38 Claims**

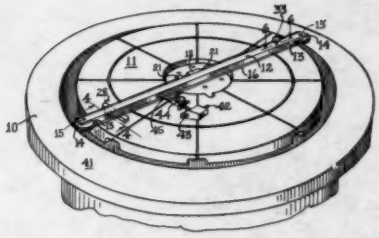


A dentist drill which includes means for introducing a coolant, such as water, through a passageway in the drill and the working burr to the work piece. The burr, either in an air bearing, journalled, or mounted within a ball bearing assembly within the head of the dentist's drill, has an axial passageway which co-operates with a concentric water inlet tube. A radially extending flanged device is attached to and radially extends from the head of the burr or extended shank holding the burr. The water inlet tube passes through an aperture, in a non-contacting relationship, in the center of the flanged device into the end of the burr. An air pressure source introduced from the drill creates an air pressure system about the water inlet tube. A housing, enclosing the flanged member, the head of the burr, and the water inlet tube, includes passageways whereby excess water and air may be discharged into the atmosphere. In operation, the water is forced through the water inlet tube into the burr and passing down the axial cavity will exit through the burr at appropriate exit ports. The air pressure system will tend to exhibit the discharge of water from the head of the burr. Any water which does discharge will contact the flanged device. The flanged device is radially sufficient to cover the width of the journal or ball bearings. Any discharge water tending to flow along the flanged device will be subjected to a centrifugal force exerted by the rotation flanged device and be discharged through the housing passageways. By a combination of air pressure and centrifugal force, the discharge water is inhibited from entering the journal or the ball bearings with subsequent deleterious results to the bearing surface.

3,762,053
DEVICE FOR TESTING THE FLATNESS OF THE SURFACE OF A LAPPING PLATE OF A LAPPING MACHINE

Lawrence Day, Chicago, Ill., assignor to Spitfire Tool & Machine Co., Inc., Chicago, Ill.

Filed Feb. 11, 1971, Ser. No. 114,494
Int. Cl. G01b *5/28*
U.S. Cl. 33—1 BB **1 Claim**

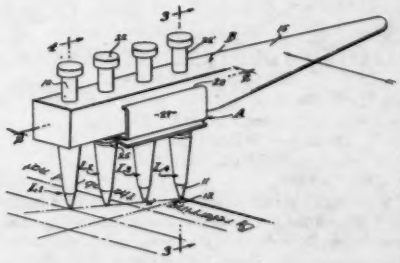


A device for testing the flatness of the surface of a flat lapping plate of a lapping machine, the device including a probing device manipulated over the surface of the lapping plate and having a probing finger riding on and in engagement with a wire cable stretched taut over and above the surface of the lapping plate and supported upon the lapping plate at opposite corresponding portions thereof. The probing device has an indicator receptive to the flat condition of the surface of the lapping plate to indicate the minutest variation in the flatness of such plate.

3,762,054
MULTI-LINE UNDERLINING INSTRUMENT

Alexander K. Stanton Ballard, 623 Midvale Avenue, Los Angeles, Calif.

Continuation-in-part of Ser. No. 125,685, March 18, 1971, abandoned. This application Jan. 17, 1972, Ser. No. 218,430
Int. Cl. B43l *13/02*
U.S. Cl. 33—41 D **6 Claims**



An instrument adapted to be manipulated with one stroke of the hand and thereby to selectively apply one or more lines to the surface of copy, and particularly useful in the underlining of printed or typewritten copy in the course of study

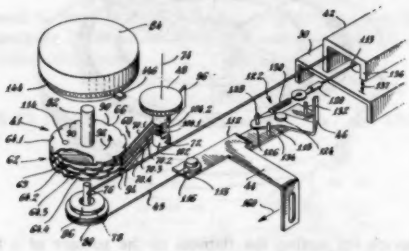
and/or proofing thereof; the instrument comprising generally a bar carrying a multiplicity of extensible and retractable lining means selectively engageable with the surface of the copy; in one form depressible to successfully engage the copy; in another form depressible to selectively engage the copy; and the lining means adapted to be held inactive as required.

3,762,055

INDEXING DEVICE FOR DRAFTING INSTRUMENT

Paul Stuart Citrin, New Milford, Conn., assignor to Sieburg Industries Incorporated, Danbury, Conn.

Filed July 15, 1971, Ser. No. 162,909
Int. Cl. B43l *13/24*
U.S. Cl. 33—81 **29 Claims**



An indexing device for drafting instruments is described wherein index movements may be obtained with direct manipulation of the drafting head of the instrument. Variable index spacings are obtained with a compound pawl acting on a ratchet wheel or member. The compound pawl is formed of individually adjustable pawl elements. In an alternate embodiment variable index spacings are obtained by changing the speed ratio coupling effective between the ratchet wheel and the drafting head. The speed ratio coupling may be varied continuously or in discreet steps. Several embodiments are described including a drafting head for dividing a line into a desired number of spaces utilizing an index device according to this invention.

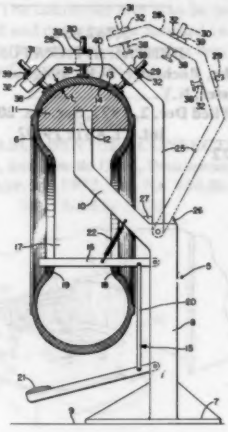
3,762,056

APPARATUS FOR MEASURING THE THICKNESS OF A BUFFED TIRE CASING

Merritt W. Wolfe, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 21, 1971, Ser. No. 164,541
Int. Cl. G01b *5/02*
U.S. Cl. 33—143 D **8 Claims**

An apparatus for measuring the thickness of a buffed tire casing to determine if a sufficient amount of rubber has been removed from the casing and the casing is suitable for retreading. The apparatus has a mandrel on which the buffed casing is mounted and supported while the measurement is made. A tensioning device moves the casing into compressive engagement with the mandrel where the thickness of the casing can be more accurately measured. A plurality of adjustable fingers, calibrated in relation to the mandrel and sufficient in number to simultaneously measure the thickness of the casing at the centerline and opposing shoulders of the casing, are moved into position and adjusted to contact the outer periphery of the buffed casing to determine if the buffed casing is suitable for retreading.

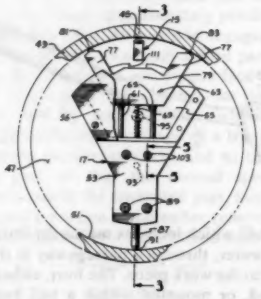


3,762,057

GAGE

Cass Kalfesh, 9947 Corella, Whittier, Calif.

Filed Jan. 27, 1971, Ser. No. 110,117
Int. Cl. G01b *5/12*
U.S. Cl. 33—147 K **13 Claims**



A gage including a supporting structure, a first measuring element mounted on the supporting structure for movement relative thereto along a first path, a second measuring element mounted on the supporting structure for movement along a second path which is generally transverse to a line between the measuring elements. The second measuring element is generally diametrically opposite the first measuring element and accurate proper alignment of the measuring elements can be achieved by fixing the second measuring element in an appropriate position along the second path. The measuring elements are insertable into a cavity and an indicator is responsive to the position of the first measuring element along the first path to provide visual measuring information.

3,762,058

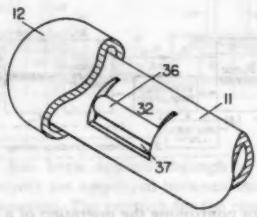
GRADE SETTING AND SURVEYOR ROD

Paul Edward Heater, Santa Rosa, Calif.

Continuation-in-part of Ser. No. 870,211, March 30, 1970, abandoned. This application June 14, 1971, Ser. No. 152,747

Int. Cl. G01b 3/08

U.S. Cl. 33—161 4 Claims



A rod or measuring instrument which has a plurality of telescoping tubes having measuring scales on the periphery of said tubes, means for locking said telescoping tubes at any random length, said locking means including a cut away portion at the inner end of each inside tube of said telescoping tubes and an inclined substantially crescent shaped channel formed in said cut away portion of said tube, and a ball or a roller fitted within said channel which ball or roller is free to roll towards a narrow end of said channel when the tubes are turned, thereby wedging said tubes together; and plugs mounted in the ends of the outer tubes.

3,762,059

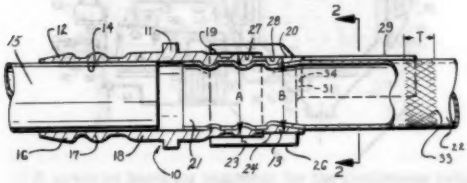
CHECK GAUGE FOR SWAGED FITTING AND TUBE CONNECTIONS

James A. Dawson, Hazelwood, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed June 21, 1971, Ser. No. 155,077

Int. Cl. G01b 5/14, 5/20

U.S. Cl. 33—174 G 6 Claims



A check gauge for determining the acceptability of a swaged connection between a fitting and a tube where the fitting is swaged down over the tube and the tube must have a predetermined depth of penetration into the fitting.

3,762,060

LAYOUT FIXTURE

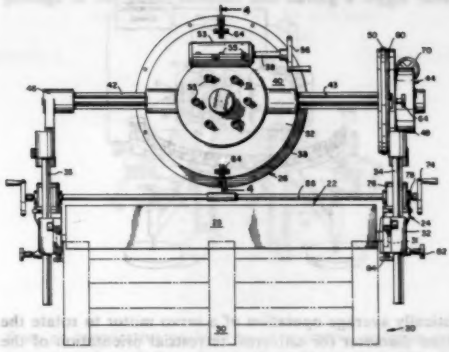
Peter S. Hardy, c/o Peerless Aluminum Foundry Co., Inc., 55 Andover St., Trumbull, Conn.

Filed June 23, 1971, Ser. No. 155,780

Int. Cl. F16m 11/12; G01b 5/14

U.S. Cl. 33—174 TD 12 Claims

A layout fixture capable of supporting workpieces weighing up to two tons and easily maneuvering and indexing the workpiece about two mutually perpendicular axes of rotation while also controlling both vertical and lateral translation. The workpiece is supported above a measuring table and can be moved at least halfway across the table to facilitate the layout and checking of the workpiece.



3,762,061

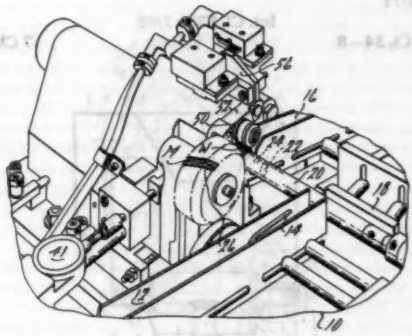
GEAR CHECKER

Russell W. Anthony, Harper Woods, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed June 11, 1971, Ser. No. 152,114

Int. Cl. G01b 5/08, 7/12

U.S. Cl. 33—179.5 R 3 Claims



A gear checker through which a succession of work gears passes on the way to a gear finishing machine, the checker being adapted to monitor gear size, root diameter, helix angle, incompletely cut gears, and malformed teeth by rolling in mesh with a master gear and in contact with a smooth roller.

3,762,062

TWIN GYRO NORTH SEEKER

James V. Johnston, 600 Madison Pike N.W., Huntsville, Ala.

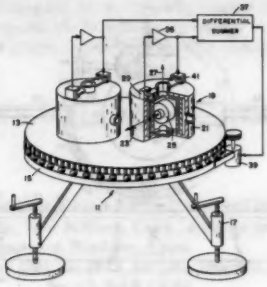
Filed July 20, 1971, Ser. No. 164,375

Int. Cl. G01c 19/38

U.S. Cl. 33—321 3 Claims

A north-seeking system having a pair of integrating gyroscopes with input and output axes in respectively parallel and normal relation to a horizontal plate and corresponding

pickoffs at equal oblique angles with a selected plate diameter. Respective pickoff amplifiers are connected to a summer for



statistically average operation of a servo motor to rotate the selected diameter for universal terrestrial orientation of the selected diameter to the North-South meridian.

ERRATUM

For Class 33—180 R see:
Patent No. 3,762,068

3,762,063

METHOD AND APPARATUS FOR DYING PULPY SLURRIES

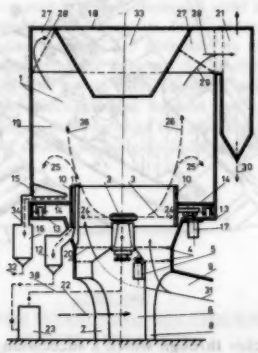
Wilhelm Mullner, Wien-Mauer, Austria, assignor to Waagner-Biro A.G., Vienna, Austria

Filed July 3, 1972, Ser. No. 268,660

Claims priority, application Austria, July 6, 1971, A 5854/71

Int. Cl. F26b *5/08*

U.S. Cl. 34—8 **17 Claims**



A method and apparatus for drying pulpy slurries. By way of a rotary sprayer, the pulpy slurry is sprayed in the form of droplets horizontally toward a wall which surrounds the sprayer, while a stream of drying gas is directed upwardly through the space between the wall and the sprayer to carry upwardly into a drying chamber droplets of slurry which are smaller than a given magnitude and which flow concurrently with the drying gas to be dried thereby. Droplets which are larger than this magnitude strike against and cling to the wall so that they can subsequently be removed therefrom to be delivered again to the sprayer.

3,762,064

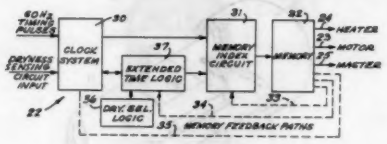
TIMER WITH CYCLE AND TIME DEPENDENT RUNOUT FOR DRYER

Carl R. Offutt, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 12, 1971, Ser. No. 198,201

Int. Cl. F26b *3/02, 19/00*

U.S. Cl. 34—45 **9 Claims**



Apparatus for controlling the operation of a dryer includes means for selecting a desired dryness condition, a circuit to sense for a predetermined dryness condition during a drying operation, a circuit for determining the elapsed time interval in attaining the predetermined dryness condition, and means for extending the drying operation by an interval of time which is a function of the elapsed sensed drying time and the selected dryness condition to improve repeatability in percent moisture retention from load to load, particularly with respect to loads which are difficult to dry.

3,762,065

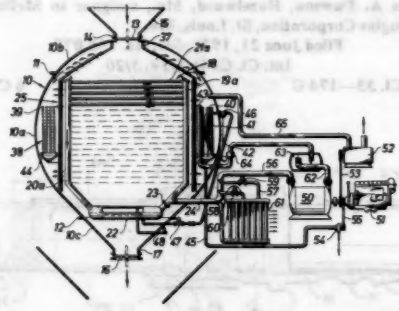
APPARATUS FOR DRYING MATERIALS

Lars Osten Wahlgren, Malmo, Sweden, assignor to Kamas Kvarnmaskiner AB, Malmo, Sweden

Filed Apr. 12, 1971, Ser. No. 133,301

Int. Cl. F26b *21/06*

U.S. Cl. 34—73 **14 Claims**



A drying apparatus comprising a sealable container is provided with a refrigerant circulating system having a condensor and an evaporator for the refrigerant which are both arranged in the container but are separated from each other by a gas permeable wall defining a space for the material to be dried the condenser being disposed in said space.

3,762,066

APPARATUS FOR USE IN SILK SCREEN PRINTING OR THE LIKE

John W. Key, 21 Duxbury, Rolling Meadows, Ill.

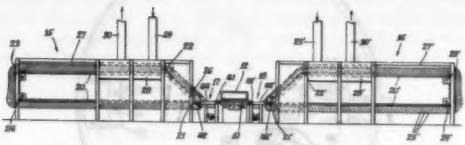
Filed July 27, 1972, Ser. No. 275,722

Int. Cl. B65g *17/12, 15/00*; B05c *11/00*

U.S. Cl. 34—150 **6 Claims**

At one side of a table on which silk screen printing is done is a wicket conveyor which indexes a step at a time to deliver the objects on which the printing is performed. At the opposite

side of the table is a wicket conveyor which takes the objects away after one color has been applied thereto and carries them through a dryer. For applying the next color the direction of movement of the two conveyors is reversed and the first named conveyor then carries the objects on which the



second color has been applied through a second dryer. Transfer conveyors are employed between the table and the two wicket conveyors. The controls for the conveyor includes switches at each side of the table that are actuated by movement of an object to that side, thereby initiating the conveyor movement.

3,762,067

COVERS OR HOODS FOR PAPER AND LIKE CONDITIONING MACHINES

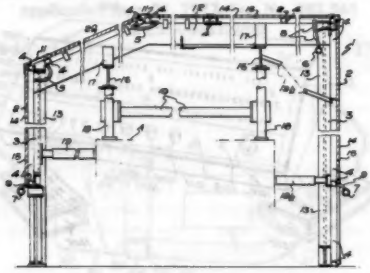
Jack Dearden Whittaker, St. Annes-on-Sea; Harry Winston Loveday, Blackburn; Denis Rigby Barbour, Taunton; William Tweedie, and George Stein Dryden, both of Hele, all of England, assignors to Greenbank Engineering Company Limited, Lancaster and Easton & Johnson Limited, Taunton, both of England

Filed Nov. 10, 1971, Ser. No. 197,221

Claims priority, application Great Britain, Nov. 20, 1970, 55,197/70

Int. Cl. F26b *19/00*

U.S. Cl. 34—201 **4 Claims**



A cover or hood for machines for the continuous production of materials in web form for paper making and board making in which the machine is totally enclosed by a frame supporting panels and horizontal and vertical peripheral tubes through which steam is circulated from a steam main and exhausted from condensate mains adjacent peripheral tubes being connected by flexible pipes.

3,762,068

FLANGE LEVELING DEVICE

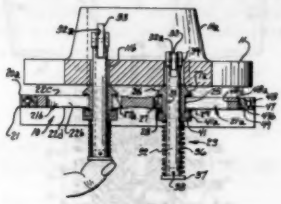
Gilbert N. Clay, 6576 White Doe Trl., Rockford, Ill.

Filed June 21, 1971, Ser. No. 154,997

Int. Cl. G01c *9/28*; F16b *19/00*

U.S. Cl. 33—180 R **7 Claims**

A flange leveling device for determining the position of bolt holes in a pipe flange and the like in which the leveling device has a body with a level indicator and a pair of flange hole engaging units mounted on the body for adjustment toward and away from each other to accommodate different flange hole spacing. Each flange hole engaging unit includes a guide member having a passage extending therethrough, a cone face at one end of the guide member, a plunger slidable in the passage in the guide member and having a toggle movable



from an inoperative position to an operative position extending crosswise of the plunger for clamping a pipe flange between the toggle and cone face to center the guide member in the flange holes.

3,762,069

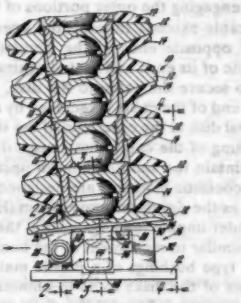
JOINT FOR A HUMAN NECK SIMULATOR

Clyde C. Culver, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1972, Ser. No. 302,025

Int. Cl. G09b *23/30*

U.S. Cl. 35—17 **3 Claims**



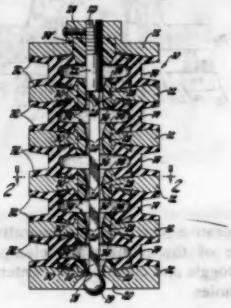
A joint for use in a human neck simulator of the type which includes a number of vertebra simulating members arranged in a stacked relationship in alignment with each other and connected for multidirectional angular movement cushioned by viscoelastic material to provide the simulator with lifelike characteristics when subjected to impact loadings. The joint includes a pivotal connection between the two lower vertebra simulating members of the simulator and the axis of movement of this connection is located forward of the connections between the other members so the simulator will lengthen as it tips forwardly under impact loadings to simulate straightening of the human neck under similar loading conditions. A pair of surfaces on the members connected by the joint move toward each other during this forward tipping movement. A mass of viscoelastic material between these surfaces cushions the joint movement in a lifelike manner, and normally maintains the joint in an angular position that simulates the tilting of a person's head when seated on a seat with a conventional rearwardly tilted seat back.

3,762,070

SPINAL COLUMN SIMULATOR

Clyde C. Culver, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1972, Ser. No. 302,033
Int. Cl. G09b 23/30
U.S. Cl. 35—17 4 Claims



A spinal column simulator for simulating human spinal column movement under impact conditions includes a number of metallic vertebra simulating disks arranged in a stacked relationship and having central annular flanges defining apertures that are aligned with each other. A number of generally annular viscoelastic elements are located between the adjacent disks and include upper and lower inwardly extending annular ribs which respectively engage the annular flanges of the associated disks to position the viscoelastic elements relative to the disks. The viscoelastic elements also include upper and lower outwardly extending annular ribs respectively engaging the outer portions of the adjacent disks. A metallic cable extends through the apertures in the disks between the opposite ends of the simulator and has a ball secured to one of its ends and seated against the adjacent terminal disk to secure the cable to the disk. A threaded fitting on the other end of the cable is received by a threaded portion of the terminal disk at the other end of the simulator to allow a slight tensioning of the cable that causes the viscoelastic elements to maintain the simulator in an upstanding configuration. The viscoelastic elements are designed to absorb and expend energy as the simulator moves from this upstanding configuration under impact loadings so that the movement of the simulator is similar to movement of the human spinal column. Split washer type bushings of a plastic material are mounted on the flanges of the disks so as to eliminate metal-to-metal contact between the cable and the disks and thereby prevent friction that would cause spurious movement of the simulator.

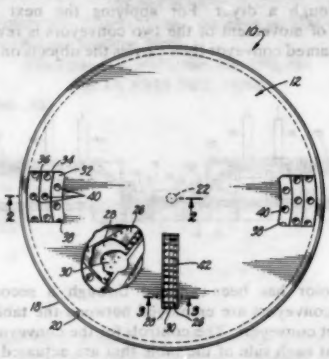
3,762,071

TEACHING AID

Benjamin F. Coffman, and Muriel F. Coffman, both of 1630 S. Barranca, Sp 7, Glendora, Calif.

Filed May 17, 1972, Ser. No. 254,254
Int. Cl. G09b 1/22, 17/00
U.S. Cl. 35—35 F 5 Claims

A teaching aid having a plurality of concentric discs mounted face to face behind a face plate for independent rotation on their common axis to different angular positions for exposing, through windows in the face plate and all but the rearmost disc, generally radial rows of characters with the exposed character rows parallel to one another and the corresponding characters in the exposed rows aligned laterally of the rows to form a large number of different character combinations readable laterally of the exposed rows. The



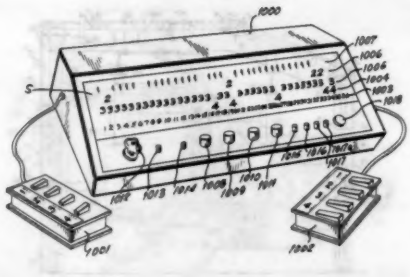
described teaching aid is a phonics teaching aid in which the characters are vowels and consonants for forming different phonetic combinations.

3,762,072

APPARATUS FOR THE INDIVIDUAL AND AUTOMATIC MONITORING OF REPLIES GIVEN UNDER EXAMINATION

Joseph From, Brussels, Belgium, assignor to S.A. Lerali, Luxemburg, Luxembourg

Continuation-in-part of Ser. No. 759,149, Sept. 11, 1968, abandoned, and a continuation-in-part of Ser. No. 102,428, Dec. 24, 1970, abandoned. This application July 16, 1971, Ser. No. 163,298
Int. Cl. G09b 5/00
U.S. Cl. 35—48 R 6 Claims



Apparatus is provided for monitoring the responses to questions posed to a group of persons under examination. The apparatus includes at least three stations for each person so that "multiple choice" type questions may be accommodated. The Examiner is provided with a control device that is electrically connected to each of the stations of each of the persons under examination. The device can simultaneously indicate selectively the responses of each of the persons under examination at respective corresponding stations. The responses are indicated by an illuminating device electrically coupled with the Examiner's control device.

3,762,073

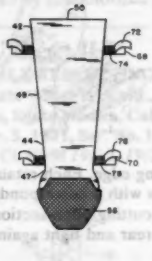
DISPOSABLE PLASTIC LEGGINGS FOR DOGS

Paul Cantales, 640 Pelham Rd., New Rochelle, N.Y.

Filed Apr. 18, 1972, Ser. No. 245,203
Int. Cl. A43b 01/14
U.S. Cl. 36—2.5 P 3 Claims

A disposable protective legging for a dog comprising a first sheet of flexible heat sealable thermoplastic material compris-

ing the back of the legging and the bottom of the paw section of the legging and shaped to generally conform to the shape of a dog's leg, a second sheet of flexible heat sealable thermoplastic material comprising the front portion of the legging and the top section of the paw section of the legging, and also shaped to generally conform to the shape of a dog's leg, the

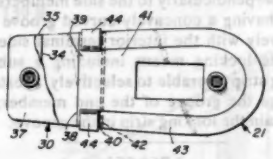


first and second sheets being heat sealed together along their side margins and bottom margin, the sheets also defining an ankle section of the legging, the top of the legging formed by the sheets being open, adjustable securing means secured to the legging at the ankle section of the legging for gathering the legging against the leg of the dog, and an anti-friction role tread on the bottom of the paw section.

3,762,074
FOOTWEAR

Maxwell Sachs, 887 W. Roxbury Pky., Chestnut Hill, Mass.

Continuation-in-part of Ser. No. 100,235, Dec. 21, 1970. This application Aug. 21, 1972, Ser. No. 282,561
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 W **17 Claims**



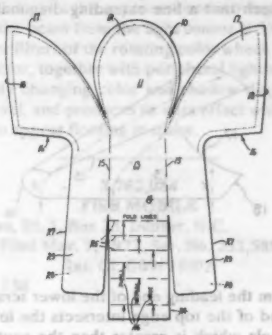
Footwear is disclosed with detachable sections having sole portions detachably attached to the sole in the heel and shank areas with upper portions attached to the sole portions.

3,762,075
DISPOSABLE SHOE

Dorothy G. Munschy, 1512 Locust Ravine, Bakersfield, Calif.

Filed July 27, 1972, Ser. No. 275,749
Int. Cl. A43b *23/00*
U.S. Cl. 36—2.5 E **3 Claims**

A disposable shoe having a sole, an upper continuous with the sole so as to define a front portion of the shoe, a first flap extending from the sole and adapted to be folded to form a back portion for the shoe, a pair of second flaps extending rearwardly from the front portion and adapted to engage each other and outwardly to overlay the first flap to retain the first flap in position as a back portion for the shoe; and indicia pro-

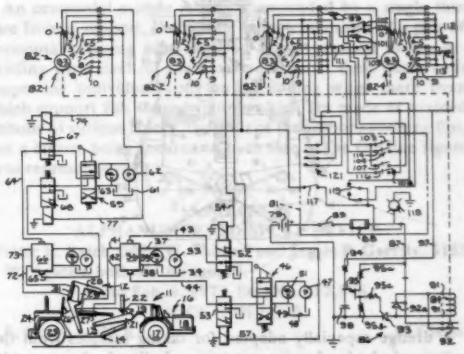


vided on the first flap designating potential fold lines where the first flap can be folded to define a shoe of the length indicated.

3,762,076
HOEING SCRAPER CONTROL SYSTEM

Larry G. Eftefield, Brussels, Belgium, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 29, 1971, Ser. No. 213,362
Int. Cl. B60p *1/00*
U.S. Cl. 37—4 **9 Claims**



An electro-hydraulic circuit provides semi-automatic control of movements of a hoeing apron loading device in a scraper vehicle. The system uses a combination of position sensing means and timing devices to cycle hydraulic jacks which manipulate the apron in a selected pattern of hoeing motions to load material into the scraper and also to position the apron for closing the bowl in preparation for transporting loaded material. The system, which may be overridden by manual controls, greatly simplifies the operator's task and thereby increases the efficiency of scrapers equipped with hoeing aprons.

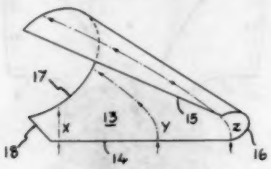
3,762,077
SNOWPLOW BLADE

David M. Henry, Kitchener, Ontario, and Jan H. Verseef, Preston, Ontario, both of Canada, assignors to Eastern Steel Products Ltd., Preston, Ontario, Canada

Filed Aug. 10, 1971, Ser. No. 170,450
Int. Cl. E01h *5/00*
U.S. Cl. 37—41 **3 Claims**

A snowplow blade mounted at the forward end of a vehicle is set obliquely with respect to the forward direction of travel,

the snowplow blade presenting a forwardly directed concave face defining a lower scraping edge, a top edge, and respective leading and trailing lateral edges, the shape and setting of the blade being such that a line extending diagonally across the



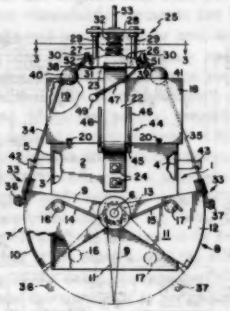
blade face from the leading end of the lower scraping edge to the trailing end of the top edge intersects the lower scraping edge at an angle which is greater than the acute angle subtended between the lower scraping edge and said forward direction of travel.

3,762,078

BENTHIC DREDGE CONSTRUCTION

Thomas J. Wetherbee, Saginaw, Mich., assignor to Trippensee Corporation, Saginaw, Mich.

Filed June 5, 1972, Ser. No. 259,425
Int. Cl. E02f 5/00
U.S. Cl. 37—54 **11 Claims**



A dredge especially adapted for taking samples from the bottom of a body of water comprises a hollow body open at its top and bottom, but provided at both its top and its bottom with closures movable between open and closed positions and biased to their closed positions. The top and bottom closures are equipped with means for latching the closures in their open positions. A latch release mechanism is provided for effecting release of the closure latch members so as to enable the closures to move from their open positions to their closed positions.

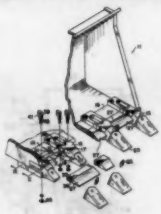
3,762,079

QUICK-CHANGE CUTTING EDGE

Paul J. Lukavich, Joliet, Ill., and Max J. Teasdale, Waterloo, Belgium, assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 2, 1972, Ser. No. 294,435
Int. Cl. E02f 9/28
U.S. Cl. 37—141 R **4 Claims**

A replaceable cutting edge for an excavating bucket comprises a number of tip adapters which are mounted in laterally spaced apart, fixed positions on the leading edge of the bucket. Each of the tip adapters has at least one pair of vertically spaced apart flanges facing an adjacent tip adapter. A cutting edge section extends between each pair of adjacent tip adapters with the ends of the cutting edge section held in vertical position by the flanges on the tip adapters. A retaining pin, in the form of a wedge member, extends through aligned openings in the flanges and in the ends of the cutting edge sections to hold the cutting edge sections in horizontal position



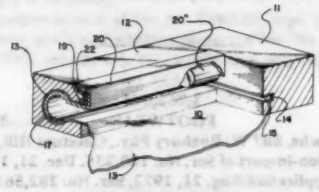
on the bucket leading edge. Each retaining pin has a tapered surface which mates with a corresponding tapered surface in the opening of the cutting edge section to force the cutting edge section to the rear and tight against the leading edge of the bucket.

3,762,080

FRAME

Clarence A. Poole, 3 N. 40th Ave., Yakima, Wash.

Filed Aug. 24, 1972, Ser. No. 283,612
Int. Cl. D06c 3/08
U.S. Cl. 38—102.91 **7 Claims**



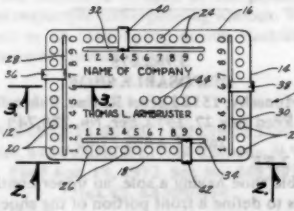
The frame comprises a pair of parallelly disposed side members, each having a rectilinearly disposed groove cut into the interior terminal side; a pair of parallelly disposed end members fastened perpendicularly to the side members, each of the end members having a concavely curved groove cut recessly and coextensively with the interior terminal side; a detachable, engageable locking means including a substantially J-shaped locking strip operable to selectively, substantially congruently engage the groove of the end member; and means operable to retain the locking strip in the groove.

3,762,081

CREDIT CARD

Thomas L. Armbruster, 118 E. Phillip Ave., Norfolk, and William N. Hill, 12411 Bel Dr., Omaha both of Nebr.

Filed Sept. 16, 1971, Ser. No. 180,980
Int. Cl. G09f 3/02
U.S. Cl. 40—2.2 **5 Claims**



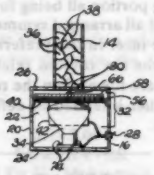
A credit card having a row of spaced apart openings formed therein adjacent each of its edges. A slide member is mounted

on the card at each of its edges and is adapted to be selectively moved with respect thereto to permit the selective covering of at least one of the openings in the associated row. The card is for use in read-out machines having means therein for passing light or the like through the openings to permit the imprinter to sense where the slide members have been moved to their proper position so that only an authorized person can obtain credit through the use of the card. The proper position of the slide members is known only to the card owner which prevents the card from being used by unauthorized persons.

3,762,082
RANDOMLY REFLECTING LAMP

David R. Mincy, Santa Monica, Calif., assignor to Giant Behemoth Industries, Santa Monica, Calif.

Filed Apr. 5, 1971, Ser. No. 131,157
Int. Cl. G09f *19/12, 19/20*
U.S. Cl. 40—34 6 Claims

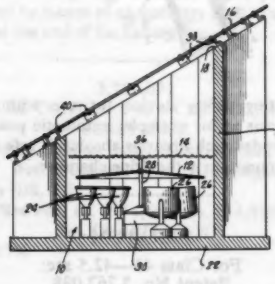


A translucent body formed internally with a plurality of randomly directed interfaces is illuminated by a light source interrupted by a fenestrated disk and juxtaposed varicolored disk rotated relative to the light source and to a fenestrated support for the body whereby light is variously reflected by the interfaces to appear as throbbing, twinkling pulses of color.

3,762,083
SKY PROJECTOR

Thomas M. Lemons, Marblehead, Mass., and Charles Neenan, New York, N.Y., assignors to Metropolitan Life Insurance Co., New York, N.Y.

Filed Aug. 24, 1972, Ser. No. 283,347
Int. Cl. G09f *13/00*
U.S. Cl. 40—130 B 1 Claim

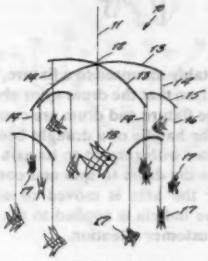


A sky projector which simultaneously projects sky images and provides ground level display effects. The sky projector includes a vertical arrangement of a light source comprising several floodlights and several searchlights pointed upwardly to generate substantially vertical beams of light, a rotating umbrella-shaped color wheel having segments of different color and covering the light source, a protective screen covering the color wheel, an image plate disposed at an oblique angle with respect to the beam, and a surrounding wall which has a slanted top surface. The image plate 9 is secured to that slanted top surface, but is spaced therefrom for the purpose of providing special lighting effects. The inwardly facing surface of the surrounding wall is shaped in cross-section to assist in forming the projected sky image. The sky projector forms a sky image which gives the appearance of moving up and down in the sky as the beam from the light source is filtered through different color filters of the rotating color wheel. Additionally, the sky projector, together with peripheral lighting units forms a continuously changing color and shadow display visible at the ground level, and produces an aura effect which causes the image plate to appear floating in space.

3,762,084
FISH MOBILE

Alene H. Jones, Rt. 1, Box 23, Denver, N.C.

Filed Mar. 7, 1972, Ser. No. 232,580
Int. Cl. G09f *19/02*
U.S. Cl. 40—138 1 Claim

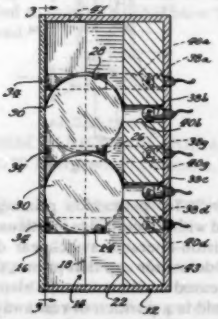


An oramental mobile which is suspended by a single thin wire from a support, the mobile being comprised of a pair of horizontal crossing arms secured at the junction to the depending wire, each of the crossing arms at their outer ends supporting individual arms on depending wires there from which support fish shaped figures which are made of braided ribbons of various colors, the ends of the ribbons forming fins, and a button being secured to each side of the fish like figure so to represent eyes.

3,762,085
ALPHANUMERIC DISPLAY DEVICE

Walter L. Raich, 3024 W. Palmer, and James P. Garrity, 5155 W. Agatite, both of Chicago, Ill.

Filed Feb. 4, 1971, Ser. No. 112,576
Int. Cl. G09f *13/18*
U.S. Cl. 40—130 K 12 Claims



An alphanumeric display device employing translucent circular discs supported edgewise within slots in a support block. A light source is supported rearwardly of each disc such that selective energizing of the light source visually displays a numeric or alphabetic character on a filter cover positioned adjacent the outer edge portions of the discs.

3,762,086

DISPLAY DEVICE WITH ROTATABLE MOTION

Ronald T. Horbinski, Milwaukee, Wis., assignor to Display Corporation International, Milwaukee, Wis.

Continuation-in-part of Ser. No. 56,462, July 20, 1970, abandoned. This application Feb. 11, 1971, Ser. No. 114,548

Int. Cl. G09f *23/02*

U.S. Cl. 40—332 **15 Claims**

A drum is rotatably mounted to a fixture, preferably a transparent outer shell, so that the drum spins about its axis relative to the fixture. The fixture and drum are connected to a pivotal arm, such as to the handle of a draught beer tap. The drum is weighted off center with respect to its axis so that movement of the arm causes the drum to spin and continue spinning for some time after the arm is moved to a vertical position. Visually attractive indicia is applied to the outer faces of the drum to attract customer attention.

3,762,087

ELECTRO-MECHANICAL RELEASE DEVICE FOR PERCUSSION PRIMING OF CARTRIDGES

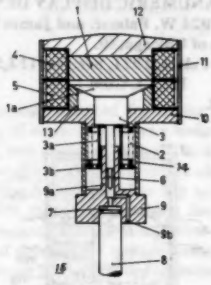
Harald Strubin, Neuenhof, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie., Baden, Switzerland

Filed June 5, 1972, Ser. No. 259,573

Claims priority, application Switzerland, Sept. 13, 1971, 13368/71

Int. Cl. F41c *19/12*

U.S. Cl. 42—84 **4 Claims**



A release device for percussion priming of a propellant charge contained within a cartridge, particularly for use in conjunction with piston-operated switchgear drives, includes a striker pin for a detonator cap that primes the cartridge. The striker pin is secured to the armature element of a holding magnet and is held in a position of rest away from the cap by magnetic attraction of the armature to a pole shoe of the magnet against a counter mechanical force created by compression of a spring. Release of the striker pin is effected by a temporary weakening of the effective magnetic field produced by the holding magnet which in turn releases the armature and striker pin assembly for movement under the force stored in the compressed spring to detonate the cap.

3,762,088

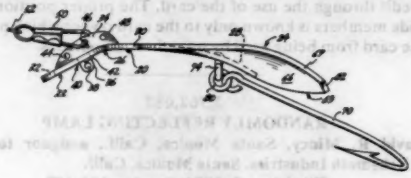
SWALLOW-TAIL FISH LURE

Byron L. Bainton, 360 Taylor Ave., Renton, Wash.

Filed June 23, 1972, Ser. No. 265,587

Int. Cl. A01k *85/00*

U.S. Cl. 43—42.5 **2 Claims**



A fish lure is disclosed to comprise a body portion having a forwardly located downturned head portion, a bifurcated, swallow-tail, trailing portion all being formed of a single piece of sheet material and all arranged symmetrically along the longitudinal axis of the lure. In the preferred form the swallow-tail divergent portions are rotated relative the lure's axis so that the inner edges are lower than the respective outer edges. This abstract is neither intended to define nor to delimit the invention in any way.

3,762,089

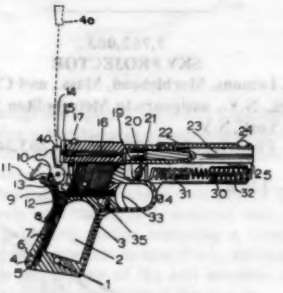
SELF-EJECTING SAFETY DEVICE

Herbert S. Meyer, Jr., Jeffersontown, Ky., assignor to William E. Cummings, Jeffersontown, Ky.

Filed June 24, 1971, Ser. No. 156,258

Int. Cl. F41c *17/06*

U.S. Cl. 42—70 F **7 Claims**



A self-ejecting safety device for use with all external hammer firearms as for example, automatic pistols, which is designed to render such firearms absolutely safe to carry with a round of ammunition in the firing chamber.

ERRATUM

For Class 43—42.5 see:
Patent No. 3,762,088

3,762,090

FISHING ROD SUPPORT AND HOOK SETTING APPARATUS

Maynard E. Nelson, 2036 Raymond, and Robert G. De Witt, 1215 Gypsum, both of Salina, Kans.

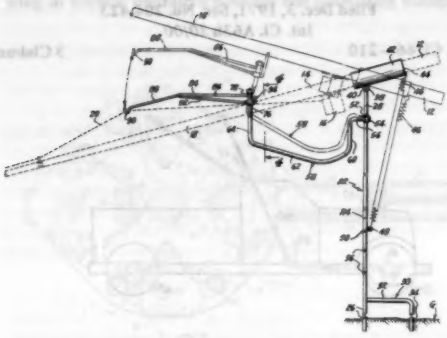
Filed Jan. 26, 1972, Ser. No. 220,831

Int. Cl. A01k *97/00*

U.S. Cl. 43—15 **1 Claim**

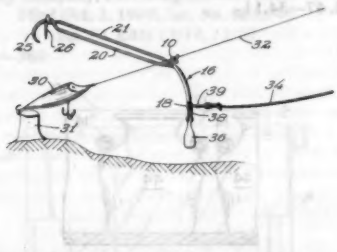
A fishing rod support in which an upright standard has a pivotal spring biased sleeve holding the butt or handle of a

fishing rod assembly, and the rod forward section is held in fishing position by a trip member. A line engaging finger is moved responsive to the exertion of a pull on the line and



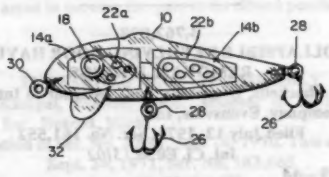
pivots the trip member to a position which releases the rod, causing the spring sleeve to pivot the rod sharply to hook setting position.

3,762,091
LURE SAVER
John A. Buczynski, 71 Fir St., Mahtomedi, Minn.
Filed June 9, 1972, Ser. No. 261,521
Int. Cl. A01k *97/00*
U.S. Cl. 43—17.2 **4 Claims**



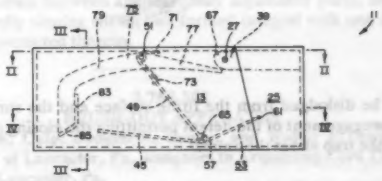
A weighted lure retrieving device having a line guide adapted to slide down a fishing line and a pair of hooks which pivot about the line guide when the lower portion of the device is pulled by means of an auxiliary cord so as to engage a trapped lure at the end of the fishing line.

3,762,092
FISHING LURE CONTAINING A CHEMILUMINESCENT SUBSTANCE
Christa V. Bercz, Oaklyn; Jolan S. Rozmanith, Cherry Hill, and Jeno P. Bercz, Oaklyn, all of N.J., assignors to Lurex, Inc., Cherry Hill, N.J.
Filed Feb. 12, 1971, Ser. No. 114,898
Int. Cl. A01k *85/00*
U.S. Cl. 43—17.6 **4 Claims**



Refillable containers adapted for the visable display of at least dual-colored light generated from chemiluminescent substances acting in cooperation with luminescent inserts, compositions, or coatings associated with at least one wall of the container. Some containers include refill openings covered by removable closures. Some other containers are formed by snapping together members forming their walls, while others have closures hinged to the container body. The containers are adaptable for use as substantially spill-proof, display, costume jewelry and, most importantly, as substantially pollution-free chemiluminescent light generating fish lures.

3,762,093
DISPOSABLE MOUSETRAP
William E. Rohde, 2849 Invergarry Rd., Memphis, Tenn.
Filed May 8, 1972, Ser. No. 251,011
Int. Cl. A01m *23/20*
U.S. Cl. 43—83.5 **3 Claims**

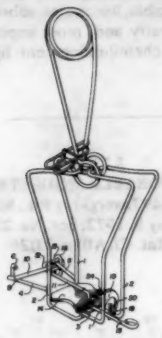


A mousetrap including a boxlike body having an opening therein which is selectively closed by a door. Mouse constraining structure is included for holding the mouse firmly against the bottom side of the boxlike body. The mouse constraining structure is pivotally attached to the door and closing the door is effective to move the mouse constraining structure to a constrained position, and opening the door is effective to move the mouse constraining structure upward to a released position. A spring is included for urging the door closed and a triggering device is provided which has a cocked position and a tripped position. Opening the door is effective to move the triggering device to the cocked position wherein the door is held open and subsequent movement of the triggering device to the tripped position is effective to release the door, thereby allowing it to snap closed. The mouse is constrained against the bottom side of the boxlike body and in the event he is able to free himself therefrom, he is still captured within the enclosed boxlike body. One embodiment of the constraining structure is intended to deliver a lethal blow to the mouse as the door snaps closed.

3,762,094
TRIGGER MECHANISM FOR ANIMAL TRAP
Frank Conibear, 2170 Evergreen Pl., Victoria, British Columbia, Canada
Filed Dec. 13, 1971, Ser. No. 207,423
Int. Cl. A01m *23/26*
U.S. Cl. 43—92 **13 Claims**

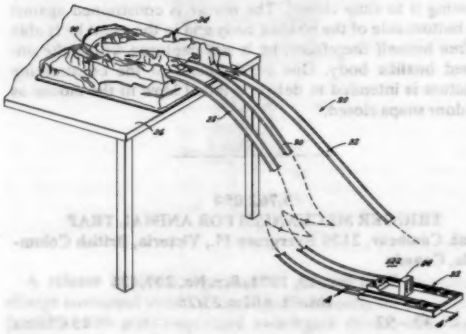
An improved trigger mechanism of the foot tread type for rotating frame animal traps, wherein a lever rests in the lower central portion of the trap substantially parallel to the base of the trap with the free end of the lever in frictional engagement with a firing surface which is connected to one frame and substantially perpendicular to the base of the trap. The fulcrum end of the lever is connected to a portion of one of the frames remote from the firing surface and has a detent mechanism associated therewith which releasably engages, when the trap is set, a retaining means associated with a proximate portion of

the other frame. An animal, when in a vulnerable position with respect to the jaws of the trap causes the free end of the lever



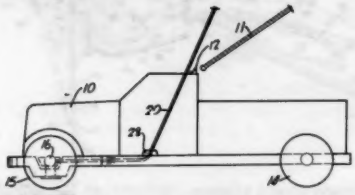
to be dislodged from the firing surface and the simultaneous disengagement of the detent permitting the closing of the jaws of the trap about the animal.

3,762,095
TOY HILL-CLIMBING SYSTEM
Dennis H. Merino, El Dorado Hills; Joseph H. Bales, Huntington Beach; Denis V. Bosley, Palos Verdes Peninsula; Brian S. Prodger, Torrance; Kurt Ruppel, Redondo Beach, and Floyd E. Schlau, Palos Verdes Estates, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Division of Ser. No. 99,084, Dec. 17, 1970, Pat. No. 3,696,555.
This application May 22, 1972, Ser. No. 255,741
Int. Cl. A63h *33/10*
U.S. Cl. 46—202 **7 Claims**



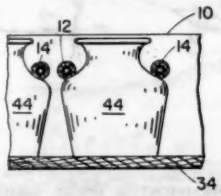
A toy hill-climbing system is disclosed including a simulated motorcycle, a motorcycle launcher, a roadway simulating rough terrain and parallel tracks connecting the roadway and the launcher. The roadway is placed at a greater vertical height than the launcher so that the tracks are upwardly sloped to simulate an actual motorcycle hill climb competition.

3,762,096
STRING CONTROLLED TOY VEHICLE
Luis E. Reyes, Chicago, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Dec. 3, 1971, Ser. No. 204,423
Int. Cl. A63h *30/00*
U.S. Cl. 46—210 **3 Claims**



A toy vehicle whose steering is controlled by strings or other tension members that extend above the vehicle, together with a socket on an upper surface of the vehicle, said socket being adaptable for receiving a push stick with which to propel the vehicle.

3,762,097
CARRIER WITH RETAINING ROLLERS
Joseph Sebato Gallo, 58 Peach St., Walpole, Mass.
Filed Mar. 30, 1971, Ser. No. 129,372
Int. Cl. A01g *9/02*
U.S. Cl. 47—34.11 **2 Claims**

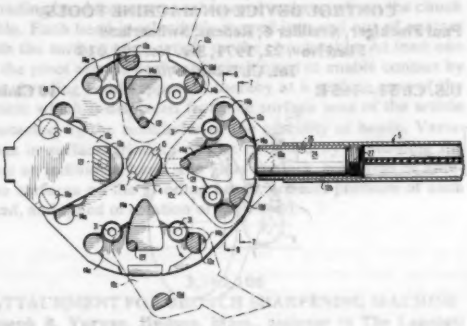


The disclosure of the invention comprises restraining rollers for use in pairs with a carrier box for the transport of flowers, vase-supported flower arrangements, potted plants, and the like in a restrained carrying position on a vehicle seat. Each said restraining roller, or rollers, is formed with a highly resilient surface, and with pointed centering pins, which are relatively moveable, and are forced yieldably apart to bite into penetrable side walls of the carrier box. The rollers of a pair are pressed inwardly and downwardly against opposite sides of the container to be held, the compression of the resilient surfaces of the rollers acting to restrain the container against the bottom of the carrier box, and further against lateral movements relative thereto.

3,762,098
COLLAPSIBLE REVOLVING DOOR HAVING REMOVABLE WINGS
Amuel E. Sheckells, Evansville, Ind., assignor to International Steel Company, Evansville, Ind.
Filed July 12, 1971, Ser. No. 161,552
Int. Cl. E05d *15/02*
U.S. Cl. 49—44 **13 Claims**

A collapsible revolving door having removable wings, each operatively connected to the door center post by a hanger bar rigidly connected to the wing frame and pivotally connected

to a respective hanger disc secured to the end of the door center post. A detent assembly is selectively mounted in either the hanger bar or hanger disc to releasably hold the respective wing in normal operative position but permitting collapse of



the wings in case of panic or when it is desired to fold the wings for clearing the doorway. The hanger assembly is provided with removable portions to facilitate the removal or disconnection of the door wing from the center post.

3,762,099

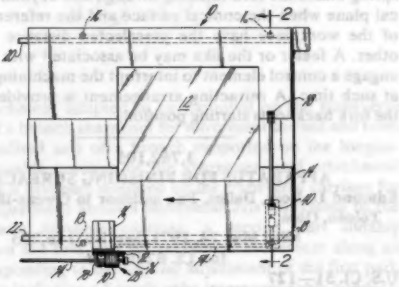
POWER ASSISTED SAFETY GATE

William P. Chaisson, Springfield, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.

Filed Oct. 2, 1969, Ser. No. 863,047

Int. Cl. E05f *15/14*, *15/00*

U.S. Cl. 49—360 **1 Claim**



A power assist comprising a pivotable handle member, a switch unit and an electromagnetic linear motor unit for use particularly in association with a safety gate of the type used on plastic injection molding machines or the like. Manually applied force on the handle member to move the safety gate from a closed position will energize the linear motor in one direction to assist in movement of the gate, and force on the handle member in the other direction will reverse the linear motor to assist in moving the gate to its closed position.

3,762,100

THRESHOLD AND SILL ASSEMBLY

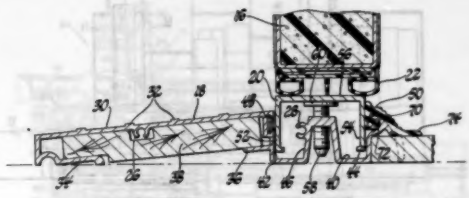
John J. Kempel, Pontiac, Mich., assignor to Taylor Garage Doors, Inc., Detroit, Mich.

Continuation of Ser. No. 2,851, Jan. 14, 1970. This application Sept. 24, 1971, Ser. No. 183,665

Int. Cl. E06b *1/70*

U.S. Cl. 49—468 **5 Claims**

A threshold and sill arrangement including an upwardly open elongated channel sectioned part with parallel spaced side wall portions for receiving a channel sectioned member with depending parallel spaced side flanges there within, and having adjustment screws to raise and lower the one relative



to the other, locking screws to fix the adjusted portions, suitable seals between the relatively adjustable parts, and a downwardly sloping sill section formed integral with one side and/or connected thereto.

3,762,101

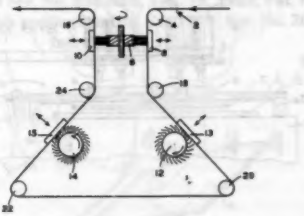
BRUSH-OUT APPARATUS

Charles R. Culp; Douglas R. Eyman, and Walter J. Lewicki, Jr., all of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Aug. 9, 1972, Ser. No. 279,035

Int. Cl. B24b *7/12*

U.S. Cl. 51—78 **3 Claims**



An apparatus is provided to brush out loose particles of dryblend from a floor material. Plural brushes brush both across the flooring surface and along the flooring surface to remove loose material from certain areas of a pattern placed on the flooring.

3,762,102

APPARATUS FOR GRINDING CYLINDRICAL AND CONICAL WORKPIECES

Ulrich Vetter, Stuttgart-Hedelfingen, Germany, assignor to Schaudt Maschinenbau GmbH, Stuttgart, Germany

Filed Feb. 19, 1971, Ser. No. 116,888

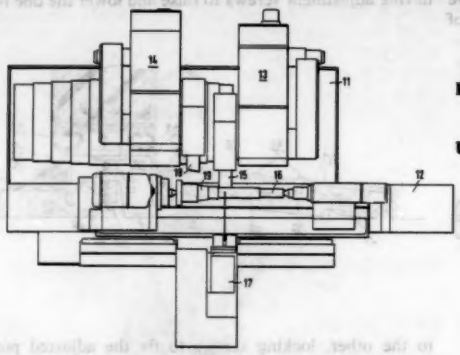
Claims priority, application Germany, Mar. 9, 1970, P 20 11 090.1

Int. Cl. B24b *5/14*

U.S. Cl. 51—105 SP **6 Claims**

For grinding selectively cylindrical and conical workpieces a grinding machine equipped with two grinding wheels is utilized, one of which wheels is mounted with its grinding face parallel to the axis of rotation of the workpiece, and the second of which wheels is mounted with its grinding face under an angle to said axis of the workpiece. This second wheel may be conical, or its axis of rotation may be mounted under an angle to the axis of the workpiece. In a preferred embodiment the axis of rotation of the second grinding wheel

may be adjusted according to the desired angle of the cone portion of the workpiece, and if an easy to operate and reliable adjusting mechanism for the second grinding wheel is provided, the first of said grinding wheels may even be omitted.



3,762,103

MACHINE FOR GRINDING AND POLISHING METALLOGRAPHIC AND MINERALOGIC SAMPLES

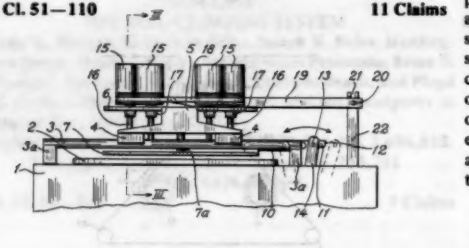
Erling Juul Nielsen, Vipperod, Denmark, assignor to Scan-Dia, Hagen, Postfach, Germany

Filed Apr. 23, 1971, Ser. No. 136,667

Claims priority, application Germany, Apr. 27, 1970, P 20 20 409.5

Int. Cl. B24b 7/02

U.S. Cl. 51—110 **11 Claims**



A machine for grinding and polishing metallographic and mineralogic samples, in which a sample holder having a plurality of apertures for rotatably receiving samples embedded in a cylindrical body of synthetic resin, or the like, is subjected to rectilinear reciprocatory movement along the face of a rotating abrasive disc, one end of the sample bodies engaging the abrasive face thereof. The apertures of the sample holder are distributed over an area corresponding to a relatively large portion of the abrasive face of the abrasive disc, so as to result in a large capacity of the machine and, hence, a great output thereof, while still insuring a substantially uniform rate of abrasion and a plane polished face of each sample in the sample holder. Means may be provided for imposing a reciprocatory rotary movement on the samples about their axes during grinding and polishing. The rectilinear guide means required for the rectilinear reciprocatory movement of the sample holder may, in a further development of the basic idea of the invention, be extended over a plurality of aligned abrasive discs, so that a multi-stage grinding and polishing machine is provided in which the sample holder with the samples accommodated therein may after each stage of grinding or polishing, be conveyed along the guide means to the next stage, thus avoiding the necessity of removing the samples from the sample holder between consecutive stages of grinding and polishing. In this form, a plurality of sample holders may be used, simultaneously at the various abrasive discs and be passed on to the next disc after each other between consecutive stages of grinding and polishing. If desired, rinsing baths may be provided between the abrasive discs.

3,762,104

CONTROL DEVICE ON MACHINE TOOLS

Paul Fluckiger, Arzillier 6, Renens, Switzerland

Filed Nov. 22, 1971, Ser. No. 201,019

Int. Cl. B24b 49/04

U.S. Cl. 51—165 R **10 Claims**

The control device is useful on material removing machine tools, such as grinders, for producing a conical surface on rotating bodies of revolution, particularly disc valve bodies, having a reference surface perpendicular to the axis of rotation. The device comprises a measuring fork having facing stops, engageable with the conical surface and the reference surface of the workpiece, respectively, and spaced apart a preselected distance. This fork is on the lower end of a freely pivoted arm which is swingable about a pivot axis parallel to the axis of rotation of the workpiece and preferably included in a vertical plane including the axis of rotation of the workpiece. An adjustable spring biases the arm to swing the fork in a direction to press the stops against the respective workpiece surfaces during machining of the conical surface, and the spring biases the fork to swing through and beyond such vertical plane when the conical surface and the reference surface of the workpiece have the preselected distance from each other. A feeler or the like may be associated with the arm to engage a control element to interrupt the machining operation at such time. A retracting arrangement is provided to swing the fork back to its starting position.

3,762,105

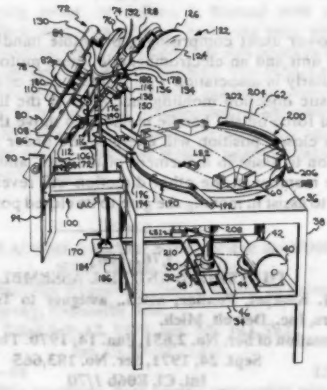
APPARATUS FOR FINISHING SURFACES

Edmund L. Ross, Dallas, Pa., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 24, 1971, Ser. No. 146,293

Int. Cl. B24b 7/24

U.S. Cl. 51—127 **19 Claims**



The invention is illustrated in a preferred embodiment for removing surface defects from glass surfaces having com-

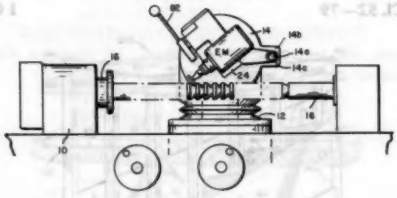
pound curves. The embodiment illustrated utilizes a plurality of rotatable abrading heads at a single abrading or finishing station. A rotatable chuck table supports a succession of glass articles, one at a time, at the abrading station a uniform distance from the plurality of heads. Pivot arms support each abrading head for movement toward and away from the chuck table. Each head is selectively moved into and out of contact with the surface of an article on the chuck table. At least one of the pivot arms is preferably positioned to enable contact by the abrading head supported thereby at a surface area of the article which is displaced from the surface area of the article contacted by the remainder of the plurality of heads. Variations in surface grinding can be obtained by controlling the time an individual head is in glass contact, gradation of abrasive surfaces on the grinding heads, contact pressure of each head, and speed of rotation of each head.

3,762,106

ATTACHMENT FOR BROACH SHARPENING MACHINE

Joseph B. Yuryan, Hudson, Mass., assignor to The Lapointe Machine Tool Company, Hudson, Mass.

Filed Aug. 11, 1971, Ser. No. 170,877
Int. Cl. B24b *19/00, 5/26*
U.S. Cl. 51—241 **10 Claims**



An attachment adapted to be mounted on the transverse carriage of a broach sharpener for movement toward and from the longitudinal axis of a broach supported on the longitudinally movable carriage of the sharpener, said attachment comprising a first part mounted on the transverse carriage for angular adjustment about a horizontal axis transverse to the longitudinally movable carriage, a second part slidably mounted on the first part for rectilinear movement along an axis corresponding to the angular adjustment of the first part, mechanism including a Scotch yoke interengageably connecting the parts operable to effect harmonic movement of the second part relative to the broach supported on the longitudinally movable carriage, said movable part mounting an electric motor, drive spindle and grinding wheel, and locking mechanism embodied in the drive operable to hold the second part at any given position to which it is moved throughout its permitted movement toward and from the longitudinal center line of the broach without drift.

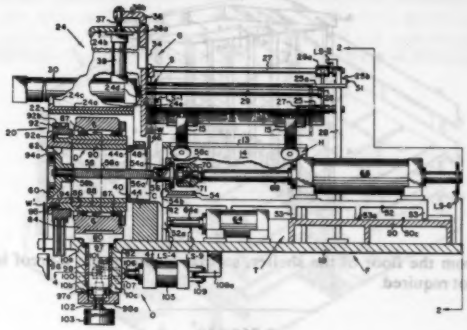
3,762,107

METHOD FOR MACHINING RINGS

Edward F. Sullivan, Saginaw, Mich., assignor to B & K Tool & Die Corporation, Saginaw, Mich.

Division of Ser. No. 26,027, April 6, 1970, Pat. No. 3,660,945. This application Mar. 13, 1972, Ser. No. 234,225
Int. Cl. B24b *1/00*
U.S. Cl. 51—290 **11 Claims**

Method for honing or lapping ring-shaped piston rings, having a gap therein, including the steps of individually stripping rings from a stack of rings and feeding them individually through a cylindrically shaped lapping drum along the horizontal axis thereof while simultaneously relatively rotating the drum and workpiece. In one version of the method, as the rings are passing through the drum, the drum is oscillated



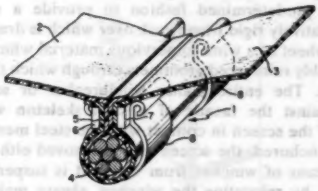
slightly about a vertically extending axis. After the rings are moved through the cylindrically shaped lapping drum, they are discharged.

3,762,108

INFLATABLE BUILDING WITH REINFORCED SEAM

Robert M. Pierson, Hudson, Ohio, assignor to Environmental Structures, Inc., Cleveland, Ohio

Division of Ser. No. 850,826, Aug. 18, 1969, Pat. No. 3,661,693. This application Dec. 16, 1971, Ser. No. 208,741
Int. Cl. E04b *1/345*
U.S. Cl. 52—2 **4 Claims**



An inflatable building having reinforced seams for joining together the marginal edges of sheets of flexible material, such as plastic or fabric, which form the cover envelope of the building, in which the edges are wrapped around a cable or other reinforcing member and clamped in the wrapped position to provide a leak-proof seam without the use of adhesives, sewing, heat sealing or other conventional fastening means. The sheets may, as an alternative, be wrapped around a filler member, then clamped to a reinforcing member.

3,762,109

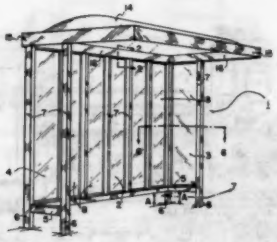
BUS SHELTERS

Arthur Merrill Cohen, Rego Park, N.Y.

Continuation-in-part of Ser. No. 16,000, March 3, 1970, abandoned. This application Jan. 20, 1972, Ser. No. 219,421
Int. Cl. E04b *1/12*
U.S. Cl. 52—11 **29 Claims**

A bus shelter in the form of an open three-sided transparent structure having a translucent roof thereon. The walls of the

structure are spaced from the ground to provide an open bottom area through which the wind may sweep dirt and debris



from the floor of the shelter, so that maintenance thereof is not required.

3,762,110

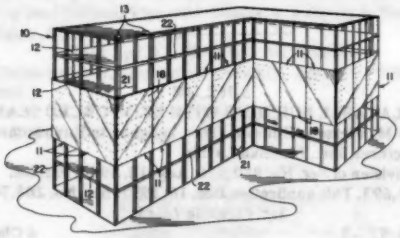
MOVABLE WINDBREAKER FOR STEEL BUILDINGS

Jack F. Boss, Jr., 68 Lincoln Ave., North Olmsted, Ohio

Filed Nov. 3, 1971, Ser. No. 195,229

Int. Cl. E04b *1/343*

U.S. Cl. 52—63 **9 Claims**



A planar grid of relatively lightweight struts dismantleably disposed in predetermined fashion to provide a unitarily portable, relatively rigid framework over which is draped and anchored a sheet of a wind-impervious material which incorporates suitably reinforced grommets through which the sheet is anchored. The entire planar windbreaker or screen is disposed against the facade of a steel skeleton with the periphery of the screen in contact with the steel members to which it is anchored; the screen may be moved either vertically, by means of winches from which it is suspended, or horizontally, by relocating the winches, always maintaining the screen outside the skeleton. Under normal weather conditions, it is an effective weather seal, while under storm conditions it is believed to flex sufficiently so as to permit relief venting of the enclosed zone, at the same time preventing the screen from being torn asunder. In operation, the screen provides a seal under normal conditions and an automatic controlled leakage in high winds as a function of wind velocity.

3,762,111

FABRICATED CONSTRUCTION OF A HOUSE

Masayuki Harada, 24-11, 5-chome Dai, Kamakura-shi, Kanagawa, Japan

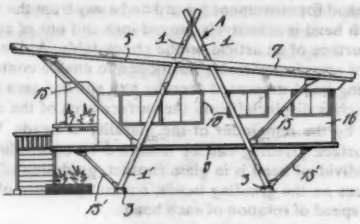
Filed May 12, 1971, Ser. No. 142,456

Claims priority, application Japan, June 3, 1970, 45/47865

Int. Cl. E04b *1/34*

U.S. Cl. 52—73 **2 Claims**

The fabricated construction of a house in which a pair of spaced and parallel stays on the opposite sides of the house each include two steel stay members welded together in the upper portions and diverging in the lower portions from each other toward the lower ends, concrete foundations to which the lower ends of the stay members are secured and which are partially buried in the ground, a roof frame structure extending between and secured to the upper portions of the parallel stays, a floor frame structure extending between and secured



to the lower portions of the parallel stays and including longitudinal bars and crosspieces connecting the longitudinal bars and other house structural components provided between the roof and floor frame structures.

3,762,112

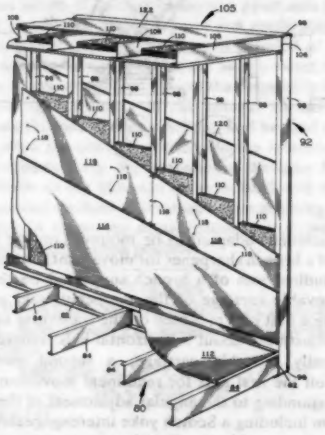
MODULAR BUILDING AND METHOD OF MAKING SAME

John M. Evans, 1516 S.W. 15th Ter., Fort Lauderdale, Fla., and Evans T. Morton, P.O. Box 2966, Pompano Beach, Fla.

Continuation of Ser. No. 38,100, May 18, 1970, abandoned. This application May 5, 1972, Ser. No. 250,684

Int. Cl. E04b *1/348*

U.S. Cl. 52—79 **1 Claim**



A modular building comprised of a living module, a utility core module and a bedroom module. The modules are arranged in a J-plan to form a complete living unit. Extra space such as covered patio and carport may be obtained by addition of panels. Each module has a steel frame construction. The invention includes the structure for and method of making and assembling the modules wherein a floor frame and a ceiling frame are affixed inside wall frames for increased rigidity.

3,762,113

MOLDED PLASTIC LANDSCAPE EDGING AND BORDER STRUCTURE

Norman P. O'Mullan, 412 Essex Ave., Bloomfield, and Paul A. Zamarra, Jr., Lake Rd., Far Hills, both of N.J.

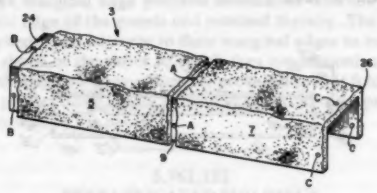
Filed July 13, 1972, Ser. No. 271,561

Int. Cl. E01c *11/22*

U.S. Cl. 52—102 **19 Claims**

A molded plastic landscape edging and border structure includes modules having blocks and mortar joints, said modules

being coupled to each other end to end. The modules may carry stakes which anchor the structure in the ground and the structure is installed on or below the ground line. For heavy



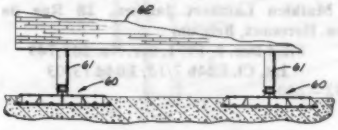
duty use, the modules have a base member which is laid in a bed of wet road material such as asphalt or cement so that when the material is dry the base is fixedly secured thereto.

3,762,114

EARTHQUAKE RESISTANT SYSTEM

Luther Eskijian, 2223 Midlothian Dr., Altadena, Calif.

Filed July 19, 1972, Ser. No. 273,103
Int. Cl. E04b *9/02*
U.S. Cl. 52—167 **10 Claims**



An earthquake resistant column or post connection to a footing or foundation comprises:

a. a turntable and a base supporting the turntable for rotation about a generally upright axis,

b. an elongated track on and extending transversely of the turntable, and

c. column support means including a bearing system carried by the track for movement relatively along the track in off-center relation to said axis accompanied by turntable rotation about said axis in response to earthquake induced movement of said base.

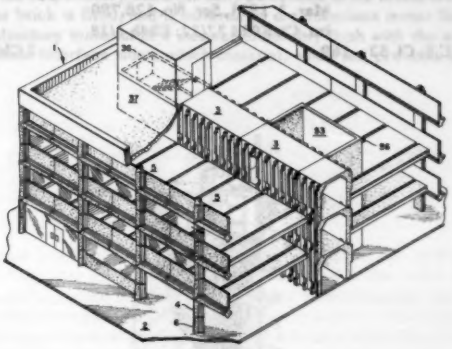
3,762,115

MULTILEVEL CONCRETE BUILDING OF PRECAST MODULAR UNITS

James F. McCaul, III, Birmingham, Ala., and Lloyd A. Compton, Denver, Colo., assignors to Schokbeton Products Corp., Birmingham, Ala.

Filed Apr. 26, 1971, Ser. No. 137,582
Int. Cl. E04b *1/00*
U.S. Cl. 52—236 **4 Claims**

A plural story building comprised of a number of basic precast concrete components, said components being held to a minimum and being so constructed to allow factory assembly of the components to such an extent that plumbing, electrical wiring, heating and ventilating, closets, bathroom fixtures, lighting fixtures, door frames, window frames, etc., are installed prior to shipment to the erection site thereby reducing field erection time. The basic components consist mainly of a corridor box forming the inside corridor's load bearing walls and ceiling and also resisting horizontal forces, a column component forming the outside walls, a slab component forming the floor for one level and the ceiling of the



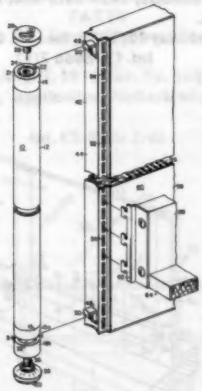
level below, and wherein the slab component is supported by and attached to a shelf in both the corridor box and the combination column, beam, panel component.

3,762,116

SPACE DIVIDER SYSTEM AND CONNECTOR ASSEMBLY THEREFOR

William C. Anderson, and Raymond A. Bleeker, both of Grand Rapids, Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 2, 1971, Ser. No. 159,360
Int. Cl. E04b *1/343*
U.S. Cl. 52—239 **9 Claims**



A streamlined, modern, space dividing system for use in environmental office design applications and the like which includes one or more hollow tubular vertical posts having panel connector adaptors secured at each end forming extensions of uniform diameter with the post. Each panel connector adaptor includes a vertically oriented annular slot adapted to receive complementary hook connectors associated with the edges of one or more space dividing panels, thereby providing support for the panel in any angular orientation about the axis of the post.

3,762,117

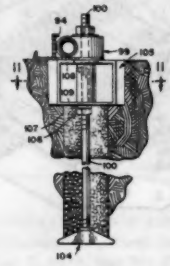
PREFABRICATED STRUCTURE FOR SHELTER OR STORAGE

Louis W. Horvath, 4304 Choctaw Cir., Huntsville, Ala.

Division of Ser. No. 823,621, May 12, 1969. This application Mar. 3, 1971, Ser. No. 120,780

Int. Cl. E02d 27/32; E04b 1/38

U.S. Cl. 52—169 **2 Claims**



An anchorage system for a prefabricated structure with a skeletal supporting framework includes a plurality of anchors spaced about the base of the structure and embedded in the ground. A threaded anchor bolt extends vertically and protrudes above the ground. A paddle-wheel footing is received on the anchor rod, and means are incorporated for vertically adjusting the location of the footing on the anchor rod. A connectr is used for interconnecting the framework of the structure with the anchor rod, and it rests on the footing. If desired, the entire anchor may be taken up and re-used.

3,762,118

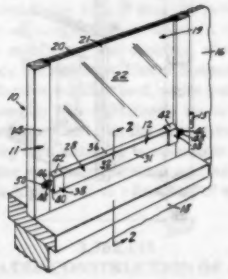
INSULATING DEVICE FOR RESTRICTING THE ACCUMULATION OF MOISTURE AND ICE ON WINDOWS

David Leonard Sanders, 1424 18th Ave. N.W., New Brighton Village, Minn.

Filed May 11, 1972, Ser. No. 252,245

Int. Cl. E06b 7/12

U.S. Cl. 52—171 **10 Claims**



A method and device for restricting the accumulation of moisture and ice on the inner surface of a window glass unit during the winter months when the window glass unit separates low temperature air from warm humidified room air. A thermal insulating device approximately the width of the window glass unit and less than about one tenth its height is mounted on the outside of the window across the lowest portion of the window glass unit to restrict heat transfer through the window adjacent the device.

3,762,119

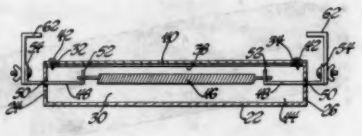
AUXILIARY SHUTTER PANEL ASSEMBLY

Niles M. Sowle, 1156 Herbert J. St., Jackson, Mich.

Filed July 26, 1972, Ser. No. 275,297

Int. Cl. E06b 1/34

U.S. Cl. 52—202 **6 Claims**



A shutter panel assembly for attachment to existing building shutters and comprising a front shutter panel member decorated or capable of being decorated and which is formed to include rearwardly disposed wall flanges having inturned edges to which a second shutter panel member may be attached for providing a back wall and an enclosed space for electrical wiring and other uses therebetween. And slot openings in the side wall flanges of the front panel member near its top and bottom edges through which are projected adjustable clamp arm assemblies under the tension of a biasing spring between the panels for self-adjustment thereof and retentive engagement with the side edges of a supportive regular shutter therebehind.

3,762,120

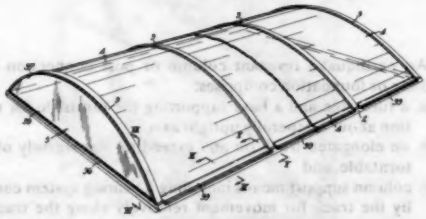
CONTINUOUS TYPE SKYLIGHT DEVICE

Leopold Mathieu Lambert Janssen, 28 Rue de l'Ancien Chateau, Herseaux, Belgium

Filed Dec. 1, 1971, Ser. No. 203,749

Int. Cl. E04b 7/18; E04d 13/03

U.S. Cl. 52—200 **3 Claims**



The invention pertains to a continuous type skylight device comprising a skirting, a base section having a external grooved edge, pairs of generally equidistant curved crosspieces and, between the said crosspieces, curved plates and end panels attached between the pair of crosspieces or arches and the terminal base sections.

3,762,121

ROOF CONSTRUCTION

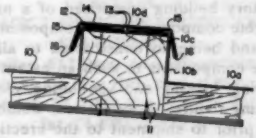
John H. Herman, Box 186, Hafford, Saskatchewan, Canada

Filed June 16, 1972, Ser. No. 263,515

Claims priority, application Canada, June 24, 1971, 116521

Int. Cl. E04d 3/366, 3/40

U.S. Cl. 52—465 **4 Claims**



A roof structure comprises an assembly of sheet metal panels secured to a rafter by securing means extending

through the panels, and has a waterproof panel joint in which the adjacent marginal edges of a pair of panels are folded back to overlie the securing means. The pair of panels thus provide a pair of generally parallel adjacent fold edges, and these fold edges are shrouded by a sheet metal cap having a pair of retroflex marginal edge portions interleaved with the folded marginal edge of the panels and retained thereby. The panels are each stepped adjacent to their marginal edges to conform to the shape of the rafter to which they are secured, and the marginal edge portions of the cap provide a pair of fold edges which project downwardly and outwardly from the tops of the steps formed by the panels.

3,762,122

PREFABRICATED BUILDINGS

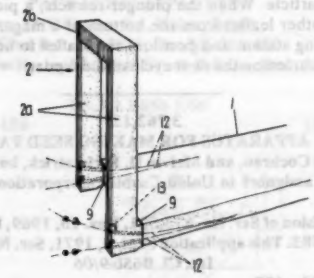
Herbert Grassl, Ruswil, and Robert Muller, Cham, both of Switzerland, assignors to Elcon A.G., Zug, Switzerland

Filed Jan. 12, 1971, Ser. No. 105,835

Claims priority, application Great Britain, Jan. 17, 1970, 2,398/70

Int. Cl. E04c *3/20*

U.S. Cl. 52—741 **11 Claims**



A structural unit for, a transportable prefabricated room element used in the construction of buildings comprises a prefabricated floor panel and rigidly attached to one or each of two opposite ends of the panel, an upstanding, prefabricated, load-bearing end structure. There is a gap between the end structure and the adjacent end of the floor panel which is occupied by a set or hardened filling (e.g., mortar or metal) and the end structure is rigidly fixed to the panel by tie rods which extend within the latter into holes in the end structure and are anchored to the end structure. In the case of two end structures, at opposite ends of the floor panel, the tie rods extend through the panel and connect the two end structures together. The unit is made, preferably in accordance with U.S. Pat. No. 3,416,273, by effecting relative movements between the floor panel and end structure to enter the tie rods into the holes in the latter but leaving a gap between the end of the panel and the end structure, reducing the gap to its final dimensions, introducing the setting filling into the gap before or after the latter is reduced to its final dimensions, and anchoring the ends of the tie rods to the end structure.

3,762,123

REFRACTORY BURNED BRICK ASSEMBLY FOR SUSPENDED ROOFS OF FURNACES

Kurt Potocnik, and Gunther Haubold, both of Wiesbaden, Germany, assignors to Didier-Werke A.G, Wiesbaden, Germany

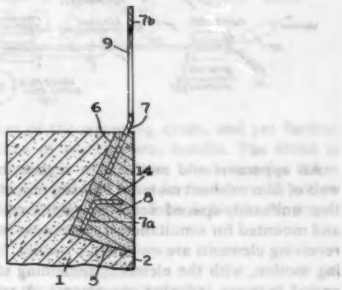
Continuation-in-part of Ser. No. 888,487, Dec. 29, 1969, abandoned. This application Nov. 22, 1971, Ser. No. 200,891

Claims priority, application Germany, Jan. 10, 1969, P 19 01 025.4

Int. Cl. E04b *1/38*

U.S. Cl. 52—509 **10 Claims**

A prefabricated refractory brick and hanger strap assembly of the burned or ceramically fired type useable particularly in the construction of suspension ceilings of a furnace. The brick is provided with a generally trapezoidal shaped recess formed and opening at an intersection of a long and short side, and on the interface side most remote from the heat of the furnace. A brick suspension plate is partially embedded in the recess after the brick is fired, and is covered by a cementious motar-like refractory material in a manner preferably flush with the adjacent interface sides, which material, when set, provides an airtight and heat protective coating for the suspension plate. The latter plate is provided with an aperture in the upright projecting part thereof for suspension during construction of the furnace. In another form, the suspension plate is provided at one end with a preformed refractory material corresponding generally to that of the brick material and of a complemental size and trapezoidal or other desired shape to be bonded to the brick to form a permanent connection of the hanger or support plate within the brick recess.



3,762,124

GRATING COMPRISING A PLURALITY OF GRATING PARTS

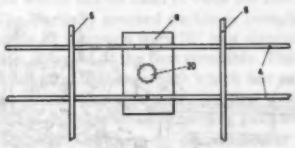
Martinus Catrinus De Jonge, Habbemalaan 17, Bilthoven, Netherlands

Filed Aug. 3, 1971, Ser. No. 168,573

Claims priority, application Netherlands, Aug. 3, 1970, 7011461

Int. Cl. E04c *2/42*

U.S. Cl. 52—666 **7 Claims**



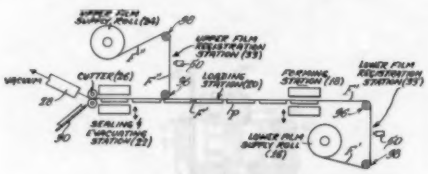
A grating comprising a plurality of grating parts each formed by a plurality of spaced longitudinal and transverse strips intersecting one another, said grating parts being connected with one another by connecting means at least one slot being provided in the end portions of two grating strips of adjacent grating parts facing each other and being substantially in alignment with each other, each slot having a projection gripping into a slot or recess of a connecting means, which is provided with at least one slot, a locking means being provided which prevents the connecting means from moving out of the slots.

3,762,125

FILM REGISTRATION APPARATUS

William F. Prena, Melrose Park, Ill., assignor to John Morrell & Co., Chicago, Ill.

Filed Mar. 17, 1971, Ser. No. 125,135
Int. Cl. B65b *41/18*
U.S. Cl. 53—51 **11 Claims**



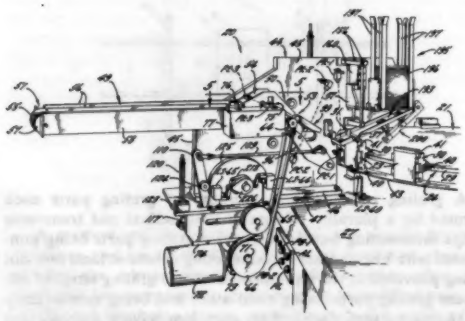
An apparatus and method for registering and applying a web of film or sheet material bearing repeat indicia to respective uniformly-spaced receiving elements arranged serially and mounted for simultaneous movement in a given path. The receiving elements are moved in a cyclical intermittent indexing motion, with the elements remaining stationary in a rest period between indexing movements. A set of power driven draw rollers feed the web of material to the receiving elements at a constant rate while the receiving elements are being indexed. A brake is applied to the draw rollers so that they grip the web during said rest period. The web passes through a set of stretch rollers which free-wheel while the web is fed to the receiving elements. At least one of the stretch rollers is actuated in a reverse direction to stretch the web while the web is gripped by the draw rollers during the rest period of the receiving elements. A control means, including sensing means responsive to repeat indicia on a part of the web between the draw rollers and the stretch rollers, activates the one stretch roller on detecting certain of the indicia. The control means includes a time delay to activate the one stretch roller a predetermined time after detecting one of the indicia, and the stretch roller is deactivated when said one of the indicia again is detected by the sensing means as the web bearing the indicia is stretched in the reverse direction.

3,762,126

ARTICLE FEEDER FOR A PACKAGING MACHINE

Wilbur M. Court, Rockford, Ill., assignor to Rexham Corporation, New York, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,784
Int. Cl. B65b *57/06*, *57/14*
U.S. Cl. 53—55 **17 Claims**



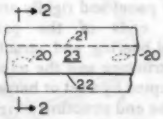
Open cartons are carried step-by-step by an intermittent conveyor along a predetermined path to a loading station where an article feeder automatically inserts an article and an informative leaflet into each carton during the dwell period of the intermittent conveyor. Initially, the leaflet is positioned at the loading station across the open carton for insertion into the carton. A first detector produces a signal as an incident to sensing the presence of the leaflet in this position and, in response to the signal, an escapement mechanism at the end of a supply conveyor releases one article from a supply of articles for movement by the supply conveyor onto a carrier located at a pick off station spaced from the loading station. The carrier is movable between the pick off station and the loading station to deliver the article to the loading station and into a position for insertion into the carton dwelling at the loading station. A second detector produces another signal when the article is on the carrier and ready to be delivered to the loading station. A third detector produces still another signal to indicate that a non-defective carton is positioned in the loading station to receive the article and the leaflet. Upon receipt of the latter two signals, a drive mechanism of the feeder is actuated to move the carrier to deliver the article to the loading station. At the loading station, a reciprocable plunger drives the article from the carrier and into the open carton. As the article is driven into the carton, the informative leaflet is folded along the sides of the article and is stuffed into the carton by the advancing article. When the plunger retracts, a pick off device pulls another leaflet from the bottom of a magazine adjacent the loading station and positions the leaflet to be stuffed into the next carton on the next cycle of the feeder.

3,762,127

APPARATUS FOR MAKING SEED TAPE

Troy Lee Cochran, and Melvin D. Kirkpatrick, both of Salinas, Calif., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 875,301, Nov. 10, 1969, Pat. No. 3,683,583. This application Sept. 7, 1971, Ser. No. 178,118
Int. Cl. B65b *9/06*
U.S. Cl. 53—177 **5 Claims**



A single strip passes while under tension and with a portion moistened through a generally V-shaped mandrel channel with a rounded lower end, and seeds are dropped into place on the tape. Then the tape is guided along a gradually deepened channel with widened lower portion and through a pair of generally circular eyes, each having a step. These eyes form the tape into an overlapped circular shape. A pair of rollers then flatten the tape and seal it closed, while retaining the overlap.

3,762,128

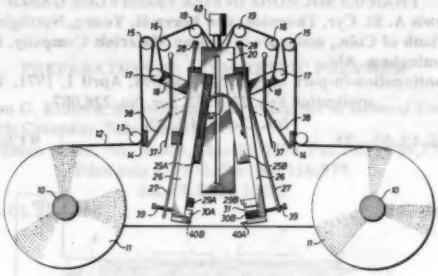
APPARATUS FOR FORMING AND FILLING BAGS

Inge Bertil Persson, Lund, and Jim Arthur Nissmo, Staffanstorp, both of Sweden, assignors to Scan Coin AB, Malmo, Sweden

Filed Sept. 28, 1971, Ser. No. 184,390
Int. Cl. B65b *9/08*, *51/30*, *61/04*
U.S. Cl. 53—182 **5 Claims**

An apparatus for forming and filling bags of heat sealable packaging material supplied as at least one web has heat sealing jaws for sealing the web when it has been shaped into a tube which are positively coordinated with a brake for the web

and a device for forming a loop of the web in such a manner that a loop is formed with the jaws closed and the brake disengaged and is straightened out with the jaws open and the brake engaged when the web is being pulled down under the action of the weight of material filled into the bag.



3,762,129

PACKAGING APPARATUS

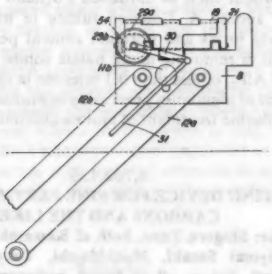
Jacob Salomon, 10 Weizman Sq., Holon, Israel

Filed Dec. 21, 1971, Ser. No. 210,472

Claims priority, application Great Britain, Dec. 22, 1970, 60,880/70

Int. Cl. B65b *5/06*

U.S. Cl. 53—186 **15 Claims**



The disclosure relates to a method and apparatus of packaging tea bags in cardboard boxes wherein the tea bags are transported along a guide in groups each of which will form the contents of one box, a folded and glued box blank is withdrawn from a stack and erected into an open-ended tubular configuration, a main flap at the top of the tubular box is folded over to form a floor of an inverted box, and the inverted box is then carried forwardly and downwardly to enclose the advancing group of articles. Advantageously a further main flap at the bottom of the box is then folded from a horizontal configuration underneath the box to a closed configuration enclosing the guide along which the box passes, the box then being advanced off the end of the guide to a delivery station.

3,762,130

PACKING MACHINES

Robert William Davies; Maxwell Francis Veness, and Leonard Thornton, all of London, S.E. 8, England, assignors to Molins Limited, Deptford, London, England

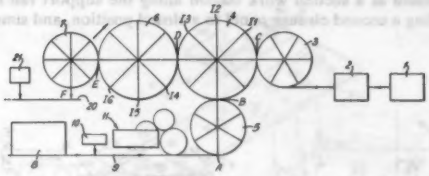
Filed Dec. 28, 1970, Ser. No. 102,013

Claims priority, application Great Britain, Jan. 9, 1970, 1,193/70

Int. Cl. B65b *11/32, 47/04, 57/12*

U.S. Cl. 53—183 **12 Claims**

A packing machine for cigarettes comprises a number of rotatable drums which are driven intermittently. Carton blanks and foil-wrapped bundles of cigarettes are fed by separate transfer drums to a common wrapping drum, which has pockets into each of which is inserted first a blank and then a cigarette bundle. Partial folding of the blank occurs while it is on the blank transfer drum, further folding as it is inserted into a pocket of the wrapping drum, and yet further folding after insertion of the cigarette bundle. The blank is partially gummed before it reaches the blank transfer drum and further gumming is effected on a further drum to which the cigarette bundles with their (now folded) blanks are transferred from the wrapping drum.



3,762,131

PACKAGING MACHINE

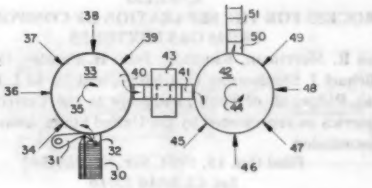
Od W. Christensson, Bromma, near Stockholm, Sweden, assignor to Christenssone Maskiner & Patenter Aktiebolag, Bromma near Stockholm, Sweden

Filed Aug. 23, 1971, Ser. No. 174,033

Claims priority, application Sweden, Sept. 3, 1970, 11999/70

Int. Cl. B65b *43/26, 43/48, 43/50*

U.S. Cl. 53—186 **10 Claims**



A packaging arrangement comprising a pair of turntables operable intermittently in synchronism with each other. Blank cartons are partially erected on one turntable and completed on the other turntable. The carton blanks move onto the first turntable along a first loading path along a radius of the first turntable after which they move along the periphery of the first turntable for 270°. At this point, they move onto a straight discharge path which lies on radii of both the first and second turntables. The partially erected carton is completed on this second turntable as it travels for 270° in a direction opposite to the direction of travel of the first turntable. The cartons are then removed onto a discharge path which lies on a radius of the second turntable. Consequently, the first loading path of the first turntable and the final discharging path are parallel to each other and each of them in perpendicular to the said straight discharge path between the two turntables.

3,762,132

APPARATUS FOR FOLDING, CLOSING AND SEALING A CONTAINER FLAT END CLOSURE

Barry C. Owen, Southfield, Mich., assignor to Ex-Cell-O Corporation, Detroit, Mich.

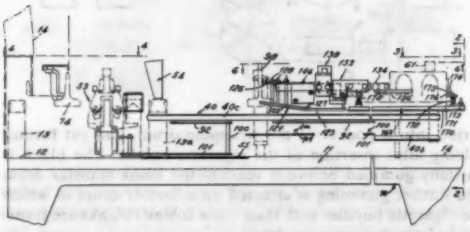
Filed July 12, 1972, Ser. No. 271,317

Int. Cl. B65b *7/18*

U.S. Cl. 53—378 **25 Claims**

An automatic apparatus for folding, closing and sealing a container flat end closure, for use in a container packaging

machine. A conveyor container support rail slidably supports a plurality of containers as they are moved along the rail by a conveyor chain from a receiving station to a discharge station. A folding means is disposed at a first work station along the support rail for folding a first closure panel to a partially closed adhesive receiving position. A closing means is disposed at a second work station along the support rail for folding a second closure panel to a closed position, and simul-



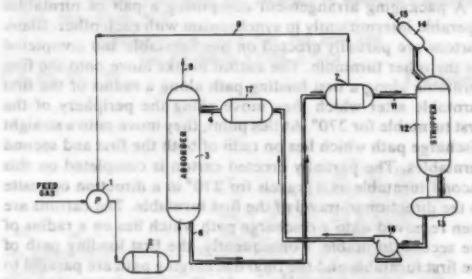
taneously moving said first panel to a closed position with the free edge of said second closure panel overlapping said first closure panel. An adhesive applying means is disposed along the support rail between the first and second work stations for applying adhesive to the outer surface of said first closure panel. A sealing pressure means is disposed at a third work station along the support rail for exerting a sealing pressure on the closure panels.

3,762,133

PROCESS FOR THE SEPARATION OF COMPONENTS FROM GAS MIXTURES

James R. Merriman, Kingston; John H. Pashley, Oak Ridge; Michael J. Stephenson, Oak Ridge, and David I. Dunthorn, Oak Ridge, all of Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 15, 1971, Ser. No. 189,543
Int. Cl. B01d *53/16*
U.S. Cl. 55—44 10 Claims



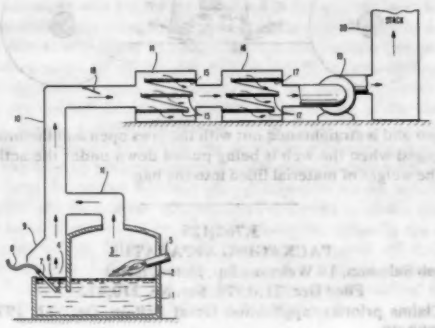
A process for the removal, from gaseous mixtures, of a desired component selected from oxygen, iodine, methyl iodide, and lower oxides of carbon, nitrogen, and sulfur. The gaseous mixture is contacted with a liquid fluorocarbon in an absorption zone maintained at superatmospheric pressure to preferentially absorb the desired component in the fluorocarbon. Unabsorbed constituents of the gaseous mixture are withdrawn from the absorption zone. Liquid fluorocarbon enriched in the desired component is withdrawn separately from the zone, following which the desired component is recovered from the fluorocarbon absorbent.

3,762,134

PREVENTION OF AIR POLLUTION BY USING SOLID ADSORBENTS TO REMOVE PARTICULATES OF LESS THAN 0.5 MICRONS IN SIZE FROM FLUE GASES

Lewis A. St. Cyr, Thornton, and Loren H. Young, Northglenn, both of Colo., assignors to Vulcan Materials Company, Birmingham, Ala.

Continuation-in-part of Ser. No. 130,398, April 1, 1971. This application Feb. 22, 1972, Ser. No. 228,087
Int. Cl. B01d *53/04*
U.S. Cl. 55—71 9 Claims



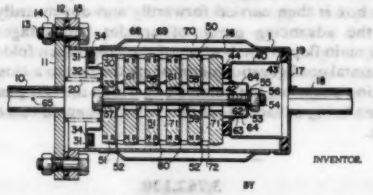
Particulates less than 0.5 microns in size are removed from flue gases by passing the flue gases into intimate contact with a solid adsorbent such as hardened Portland cement, calcium sulfate or zeolite A. Calcium sulfate in its anhydrous and hemihydrate forms and Portland cement pellets are particularly useful in removing metal halide solids, e.g., $AlCl_3$, KCl, NaCl, and AlF_3, of less than 0.1 microns in size from the gaseous effluent of aluminum processing operations which utilize a gaseous chlorine treatment of molten aluminum.

3,762,135

SEPARATING DEVICE FOR FINE PARTICLES, SUCH AS CARBONS AND THE LIKE

Kenji Ikebe; Shigeru Tano, both of Kawasaki-shi, Kanagawa-ken; Kiyomi Sasaki, Machida-shi, Tokyo, and Tatsuki Mayusumi, Tokyo, all of Japan, assignors to Tokyo Roki Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Aug. 31, 1971, Ser. No. 176,462
Int. Cl. B03c *1/02*
U.S. Cl. 55—100 6 Claims



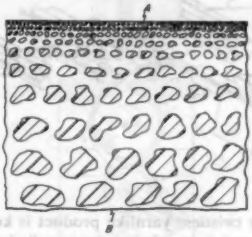
A separating device for fine particles which comprises a housing provided with an inlet port adapted to intake the engine exhaust gas and an outlet port through which a cleaned exhaust gas is discharged. Within the housing, a magnetic unit having a plurality of magnetic elements is arranged in parallel in the axial direction of the housing with a space from each other to form magnetic fields in each space. The magnetic unit is also spaced from the inner surface of the housing. The space between the magnetic elements forms a part of a gas passage connecting the inlet port to the outlet port of the housing. The

fine particles coming to this space are forced away from the space due to the magnetic force therein and cleaned exhaust gas is discharged to the outside of the housing through its outlet port.

3,762,136
PREPARATION OF ASYMMETRIC POLYMER MEMBRANES

Shiro G. Kimura, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 36,923, May 13, 1970, Pat. No. 3,709,774
Filed July 1, 1971, Ser. No. 158,979
Int. Cl. B01d *53/22*
U.S. Cl. 55—158 **2 Claims**

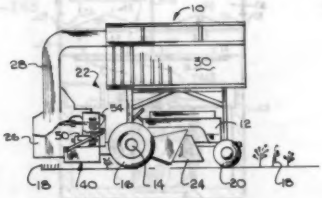


A method is disclosed for the preparation (by the utilization of a proper solvent system) of dry asymmetric membranes comprising a porous layer of interconnected crystals of polymer material. Membranes of many polymer materials may be optionally prepared either with or without a dense surface layer as one face thereof. In either case the porous layer is structured with graded porosity. A three-component casting solution is prepared containing the polymer, a first good volatile solvent for the polymer and (relative to the first solvent) a poor less-volatile solvent for the polymer, which is miscible with the good solvent. A membrane is cast, allowed to desolvate for a short time and is then immersed in a leaching agent, that is miscible with both the aforementioned solvents but is a non-solvent for the polymer. The membrane is then permitted to dry.

3,762,137
STALK SHREDDER

Donald E. Veretto, 709 80th St., Lubbock, Tex.

Filed Oct. 2, 1972, Ser. No. 294,367
Int. Cl. A01d *87/10*
U.S. Cl. 56—13.3 **2 Claims**



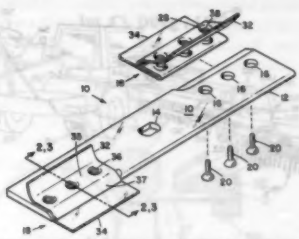
A shredder head is attached to the vehicle carrying the cotton stripper. Thus, cotton stalks are shredded within five seconds after cotton is stripped therefrom. This aids proper land management of prompt incorporation of the shredded material into the soil and reduces pests, including the cotton boll weevel.

The shredding is accomplished by a pair of blades pivoted to a horizontal plate mounted on a vertical, rotating shaft within the head and aligned with each row of cotton.

3,762,138
MOWER BLADE

Russell H. Michael, 1809 Winans Ave., Halethorpe, Md.

Filed June 15, 1972, Ser. No. 263,257
Int. Cl. A01d *55/18*
U.S. Cl. 56—295 **4 Claims**

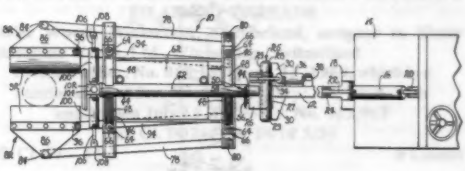


A mower blade assembly including a blade bar and cutter elements removably attached to the blade bar for mounting on a perpendicular power driven shaft wherein the cutter elements are positioned adjacent the ends and leading edge of the blade bar including means for releasably securing the cutter elements to the blade bar.

3,762,139
SHAKER UNIT

Neil R. Tompkins, Yuba City, Calif., assignor to Halsey Harvester & Supply Co., Inc., Colusa, Calif.

Filed Sept. 25, 1972, Ser. No. 291,670
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 TS **8 Claims**



A mechanical shaker unit particularly suited for use in dislodging tree-borne crops such as fruits and nuts. The unit includes a frame, supported by a journal coupled to the distal end of a transportable boom, having provided therein a forge generating device for imparting vibratory forces to the frame, and a pair of clamping arms, pivotally coupled at the opposite sides of the frame, having a pair of pivotally supported pads mounted at the distal ends thereof for receiving therebetween a limb or the trunk of a selected tree, and linkage for maintaining the pads in a substantially parallel relationship as the arms are pivotally displaced as a clamping force is applied to the surface of a selected portion of a tree.

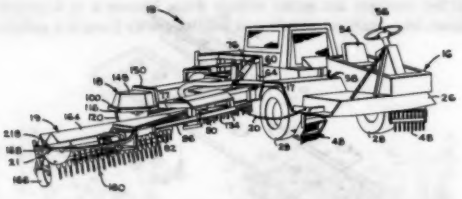
3,762,140
WINDROWING MACHINE

Donald P. Block, Orlando, Fla., assignor to FMC Corporation, San Jose, Calif.

Filed Apr. 27, 1972, Ser. No. 248,221
Int. Cl. A01d *51/00*
U.S. Cl. 56—328 R **20 Claims**

A windrowing machine for raking fruit from the ground under rows of trees including a powered three-wheeled vehicle having a boom pivotally supporting a low profile main rake and a slide rake both of which are partially supported by caster wheels. The boom is pivoted to the vehicle midway between the front and rear wheels to minimize the adverse effect of ground undulations, and the slide rake and main rake

have low profiles to avoid low tree branches. The main rake covers a swatch inwardly of the centerline of the tree row and forms a straight windrow under the vehicle. The slide rake overlaps the main rake and is movable between an extended



position projecting partially beyond the tree row centerline and a retracted position moved toward the vehicle out of the tree row centerline in response to contact of a slide rake actuator with a tree trunk or other obstacle.

3,762,141

MACHINES FOR PRODUCING SYNTHETIC YARN

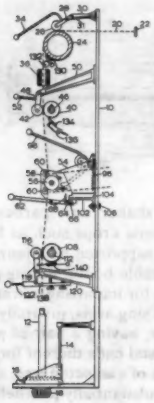
Ian David Slack, and Philip Trevor Slack, both of Drighlington, near Bradford, England, assignors to Plasticisers Limited, Drighlington, England

Continuation-in-part of Ser. No. 738,479, June 20, 1968, abandoned. This application Nov. 23, 1970, Ser. No. 91,792

Claims priority, application Great Britain, Feb. 20, 1968, 8,097/68

Int. Cl. D02g 3/06; B26f 1/24

U.S. Cl. 57—31 **21 Claims**



This invention provides a single machine for use particularly in the production of twisted synthetic yarn from continuously produced synthetic filament material. By employing the particular physical arrangement of the various stages of the process proposed by the invention a particularly compact machine is produced which can handle a large number of separate filaments simultaneously. The machine comprise a ring twister device of novel design mounted at the output end of a yarn path, the input end of which is fed with synthetic tape, the yarn path extending through or over heating means located between said input and a yarn stretching means and fibrillator means is located between said yarn stretching means and yarn tensioning means, the latter serving to supply fibrillated material to the ring twister device. The separate stages are conveniently mounted vertically one above the other.

3,762,142

YARNLIKE PRODUCT KEPT TOGETHER BY CIRCUMJACENT POLYMER MATERIAL, AND A METHOD AND AN APPARATUS FOR PRODUCING SAID PRODUCT

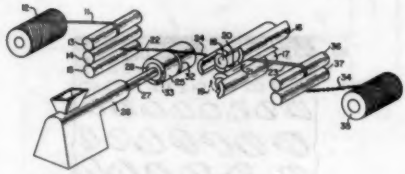
Ole-Bendt Rasmussen, Topstykket-7, Copenhagen, Denmark

Filed Mar. 2, 1971, Ser. No. 120,186

Claims priority, application Denmark, Mar. 3, 1970, 1040/70; Apr. 2, 1970, 1644/70

Int. Cl. D02g 3/00, 3/40

U.S. Cl. 57—34 R **15 Claims**



A generally twistless yarnlike product is kept coherent by means of circumjacent polymer rings applied at intervals, high bulk being achieved by a loop effect as the filaments or fibres are differently contracted between the rings. To make such a product and similar products bound with rings, a bunch of fibres or filaments is temporarily brought in twisted and revolving state, and strips of a polymer in fluid state are spun around by means of the revolution of the bunch.

3,762,143

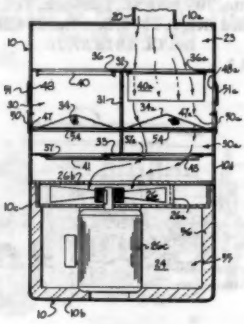
APPARATUS FOR PNEUMATICALLY CLEANING OPEN-END SPINNING MACHINES

Richard Gordon Stewart, Heaton, Mersey, England, assignor to Park-Cramer (Great Britain) Ltd., Oldham, Lancashire, England

Division of Ser. No. 831,915, June 10, 1969, Pat. No. 3,627,584. This application Dec. 1, 1971, Ser. No. 203,686

Int. Cl. D01h 11/00; B01d 35/12

U.S. Cl. 57—56 **8 Claims**



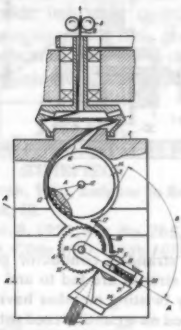
Means for maintaining a substantially constant high pressure suction air stream at a plurality of open-end spinning units while alternately filtering the air stream through a pair of generally parallel filter-containing air flow chambers in advance of a high pressure suction fan whereby fiber waste may be removed from each chamber and its filter while the air stream flows through the other chamber without reducing the efficiency of the air flow at the spinning units as effected by the fan.

3,762,144

APPARATUS FOR SEPARATING FIBERS FROM FIBROUS SLIVER

Stanisav Didek, and Zdenek Svec, both of Usti nad Orlici, Czechoslovakia, assignors to Vuzkumny Ustav Bavinarsky, Usti nad Orlici, Czechoslovakia

Filed Mar. 29, 1971, Ser. No. 128,901
Claims priority, application Czechoslovakia, Mar. 27, 1970, 2038/70
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.91 18 Claims



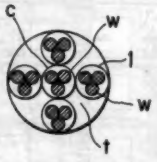
A rotary carding roller receives a fibrous sliver which moves from a supply device in a predetermined path towards the carding roller. A feed roller is located in this path and receives from the supply device fibrous sliver on its circumferential surface, to subsequently release the sliver to the carding roller. Contact means defines with the feed roller a nip zone upstream of the carding roller and operative for effecting contact of the fibrous sliver with the feed roller in a sense resulting in travel of the sliver on and with the circumferential surface from the nip zone to the carding roller.

3,762,145

STRANDED METALLIC CORD FOR REINFORCING RUBBER ARTICLES

Michitsugu Kikuchi; Akishige Kasahara, both of Higashi-Murayama City, Tokyo, and Takuji Fukuda, Kodaira City, Tokyo, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Aug. 2, 1971, Ser. No. 168,151
Claims priority, application Japan, Aug. 10, 1970, 45/78768
Int. Cl. D02g *3/48*; D07b *1/10*
U.S. Cl. 57—145 9 Claims



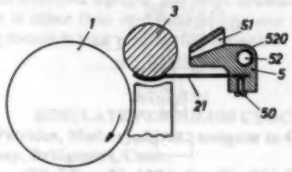
A stranded metallic cord for reinforcing rubber articles, comprising a core strand having a plurality of metallic filaments, and at least two peripheral strands, each consisting of a plurality of twisted metallic filaments, twisted about a core strand, with circumferential spacings. The metallic filaments in each of the core and peripheral strands are so disposed as to cause every filamnnt in the strand come to the periphery of the strand.

3,762,146

FIBRE SLIVER SPINNING DEVICE

Hans Landwehrkamp, Gerolfing, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed July 26, 1971, Ser. No. 166,072
Claims priority, application Germany, July 28, 1970, P 20 37 298.9
Int. Cl. D01g *15/40*
U.S. Cl. 57—58.95 8 Claims



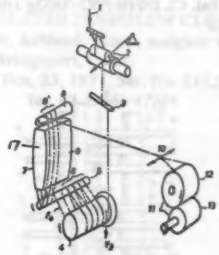
The specification describes a device for spinning fibre sliver comprising means defining a spinning chamber receiving fibres from an opening up means for opening up a fibre sliver being fed to it by a feed means. The feed means have as one element a draw-in roller arranged on a holder and as a further element a feed plate. One of these elements of the feed means is resiliently fixed at one end for producing a relative spring force between the feed plate and the draw-in roller for exerting a gripping pressure.

3,762,147

APPARATUS OF RELAXING DRAWN HIGH-POLYMERIC FILAMENT THREADS

Olivier Wuest, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Division of Ser. No. 858,188, Sept. 15, 1969, which is a continuation of Ser. No. 580,002, Sept. 16, 1966. This application July 15, 1971, Ser. No. 162,962
Int. Cl. D02j *1/22*; D01d *5/20*
U.S. Cl. 57—55.5 8 Claims

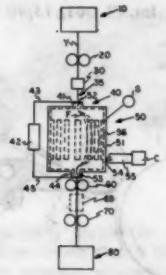


The high-polymeric filament thread is relaxed by being passed over the convexed sides of the heating element as well as over an upper stationary roll and a lower rotating roll. Each winding of the thread in this relaxing zone is heated so as to cause relaxation without allowing any substantial cooling down of the thread. The thread tension is reduced about the rotating roll so as to maintain the thread tension below the tension caused by relaxation of the thread. The thread is delivered from the relaxing zone at a tension slightly higher than the initial tension as supplied to the relaxing zone.

3,762,148
TEXTURING PROCESS AND APPARATUS THEREFOR

Herbert T. Thrower, Jr., Spartanburg, S.C., assignor to Hoechst Fibers Incorporated, Spartanburg, S.C.

Filed Mar. 27, 1972, Ser. No. 238,087
Int. Cl. D02g *1/04*; D01h *7/92*
U.S. Cl. 57—77.3 34 Claims

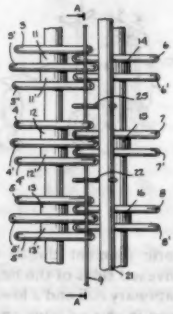


A process and apparatus are disclosed for texturing a multistrand textile material. Sufficient electrical charge density is imparted to the strands to cause the strands to repel each other and flare. While the material is in the flared state, it is moved under a predetermined tension through a twist zone where an electrical field is traveling in a closed path transverse to the direction of strand movement. Under the effects of the electrical field, the strands are driven around the closed path of the field and a false twist is imparted to the material. A heating and cooling zone are presented upstream of the twist zone to set twist in the yarn for the production of a stretch yarn. Optionally, a second heat zone may be positioned downstream of the twist zone to produce a low torque, bulk yarn. An electrodynamically rotating alternating current electric field is a preferred means for imparting twist in the twist zone.

3,762,149
FALSE-TWIST DEVICE

Josef Raschle, Buetschwil, Switzerland, assignor to Heberlein & Co. AG, Gall, Switzerland

Filed Apr. 20, 1972, Ser. No. 245,966
Claims priority, application Switzerland, May 14, 1971, 6945/71; Feb. 22, 1972, 2533/72
Int. Cl. D01h *7/92*; D02g *1/04*
U.S. Cl. 57—77.4 8 Claims

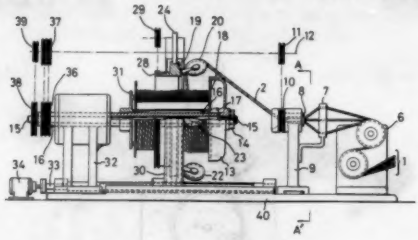


False-twist device comprising disc-shaped friction units mounted on two parallel rotatable shafts to form cuneate throats in which yarn to be false-twisting may be positioned, and threading means including thread-guides for receiving the yarn and shiftable to position the yarn in the throats.

3,762,150
HIGH SPEED STRANDED CONDUCTOR PRODUCTION PROCESS

Hisateru Akachi, Kanagawa-ken, Japan, assignor to Oki Densen Kabushiki Kaisha, Kanagawa, Japan

Filed Apr. 29, 1971, Ser. No. 138,688
Claims priority, application Japan, May 13, 1970, 45/41097
Int. Cl. D07b *3/00*
U.S. Cl. 57—156 11 Claims

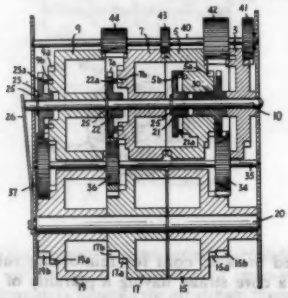


A high speed stranded conductor production process in which individual strands are fed to and onto a reel through a concentric rotary twisting member having holes therein, said reel being mounted on a cantilevered rotary shaft and having a predetermined drum and flange diameter ratio selected for producing a predetermined variable pitch in a stranded conductor formed from said strands and after the passage through said twisting member, prior to being fed to and onto said reel, said strands are passed over grooved guide means mounted on a ring-shaped rotary member provided around said reel independently of the reel and adapted to be rotated relative to the reel in the same direction or the opposite direction to the reel at a differnet speed from the reel.

3,762,151
TIME-DETECTING SYSTEM FOR A DIGITAL INTERVAL TIMER

Kiyoshi Kitai, Tokyo; Mitsuo Koyama, Chiba-ken; Shogo Kato, Kichioka; Yuzuru Takazawa, Tokyo, and Shinji Nagaoka, Chiba-ken, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1972, Ser. No. 307,865
Claims priority, application Japan, Nov. 18, 1971, 46/091886
Int. Cl. G04b *13/00*
U.S. Cl. 58—22 6 Claims



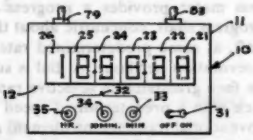
A time-detecting system for a digital interval timer comprises a plurality of detecting wheels mounted for rotation independently of each other upon a detection shaft. The time-indicating wheels of the timer are also mounted for rotation

independently of each other upon the detection shaft and each timing wheel is positioned on the shaft adjacent one of the detecting wheels. Each detecting wheel includes a set of projections which extend toward its associated timing wheel and each timing wheel has a corresponding set of holes for receiving therein the projections when the detecting wheels and timing wheels are angularly aligned with respect to each other. A biasing spring urges the detection shaft in one direction to force the detecting wheels against their associated timing wheels so that when the projections and holes on each set of wheels are in alignment, the biasing spring will force the detection shaft in one direction causing the projections to slide into their respective holes. The movement of the detection shaft thus provides an output indicating that the reference time set in the timer coincides with the actual time displayed by the time-indicating wheels.

3,762,152
RESET SYSTEM FOR DIGITAL ELECTRONIC TIMEPIECE

Frank H. Marz, Delavan, Wis., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Dec. 8, 1971, Ser. No. 205,970
Int. Cl. G04c *3/00*; G04b *19/30*
U.S. Cl. 58—23 R **9 Claims**

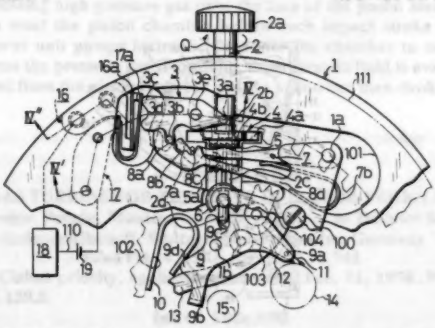


A reset system for a digital electronic clock of the multistage countdown type, comprising a zero reset switch connected to the seconds stages of the clock to set and hold both at zero without disturbing the other clock stages, and separate reset switches for supplying a one hertz reset signal directly to the minutes and hours stages, on a selective basis, to set those stages as desired. Provision is also made for high speed setting of the various stages of the clock.

3,762,153
TIME-SETTING DEVICE FOR AN ELECTRONIC TIMEPIECE

Katsuhiko Komiyama, and Yoshio Iinuma, both of Tokyo, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1972, Ser. No. 227,535
Claims priority, application Japan, July 12, 1971, 46/51635
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 R **7 Claims**



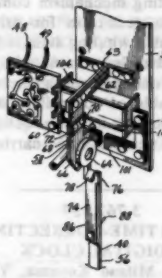
This invention relates to improvements in and relating to time-setting device for an electronic timepiece wherein a mechanical vibrator, preferably a balance wheel tuning fork, a crystal oscillator or the like, used as its time base is kept in its oscillating state by means of electric energy.

The invention resides in a time-setting device for an electronic timepiece, comprising a switching means adapted for switching over an electronic timepiece drive circuit from its active and oscillation-maintaining state for a mechanical oscillator acting as a time base of the timepiece, to its unactive and non-energizing state for the mechanical oscillator, and mechanical positioning means for a time-settable stem of said timepiece adapted for axially positioning the stem at its several axial positions including a time-setting one, said device being characterized by that the most drawn-out position of said stem is other than said time-setting one and where said switching means is kept in its ineffect position.

3,762,154
SIMULATE PENDULUM CLOCK

Christie Petrides, Medway, Mass., assignor to General Electric Company, Bridgeport, Conn.

Filed Dec. 23, 1971, Ser. No. 211,578
Int. Cl. G04b *47/04*
U.S. Cl. 58—29 **5 Claims**



A pendulum clock powered by direct current wherein a pendulum is functionally separated from a timekeeping movement for driving the hands of the clock. A unique separate electromagnetic motor for driving the pendulum is located below the timekeeping movement.

3,762,155
SIMULATED PENDULUM CLOCK

Chester B. Marble, Ashland, Mass., assignor to General Electric Company, Bridgeport, Conn.

Filed Dec. 23, 1971, Ser. No. 211,343
Int. Cl. G04b *47/04*
U.S. Cl. 58—29 **7 Claims**

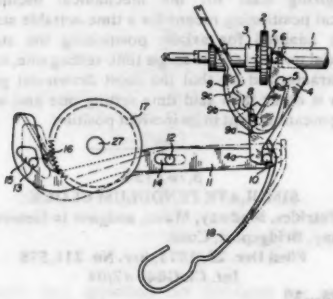
A pendulum clock powered by direct current wherein a pendulum is functionally separated from a timekeeping movement which drives the hands of the clock. The pendulum is driven by a separate electromagnetic movement which applies a drive force very close to the fulcrum of the pendulum so that a long pendulum arm and bob may be displayed without viewing the drive mechanism.

3,762,156

TIME-PIECE

Cyril Vuilleumier, Bienne, Switzerland, assignor to Societe Suisse Pour L'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Jan. 15, 1973, Ser. No. 323,459
Int. Cl. G04b 27/02
U.S. Cl. 58—63 7 Claims



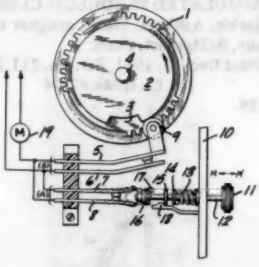
A seconds hand setting mechanism comprising a seconds wheel, a power-driven gear-train for driving the seconds wheel, an axially movable winding stem, a setting lever actuated by the stem, a rocking lever actuated by the setting lever, a click carried by the rocking lever, a ratchet wheel operable by the click and capable of controlling the seconds wheel through a magnetic coupling independently of the gear train to advance or retard a seconds hand carried by the seconds wheel.

3,762,157

TIME-SETTING AND TIME-CORRECTING DEVICE FOR A DIGITAL CLOCK

Kiyoshi Kitai, Tokyo; Mitsuo Koyama, Yotsukaido; Shugo Kato, Kichioka; Yuzuru Takazawa, Tokyo, and Shinji Nagaoka, Yotsukaido, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1972, Ser. No. 305,688
Claims priority, application Japan, Nov. 22, 1971, 46/093066
Int. Cl. G04b 19/02
U.S. Cl. 58—125 C 7 Claims



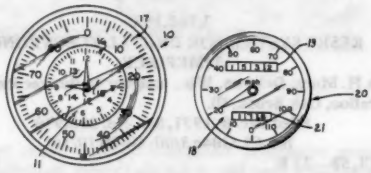
A device for making time settings and time corrections in a digital clock. The time-indicating elements other than the last time unit indicating element are preliminarily set to a time that is to be set in the clock. The clock driving circuit is prepared by manually opening a switch for disenabling thereof automatically when the least time unit time-indicating element assumes a selected position. The position of the least time unit element is sensed by a sensor and when it arrives at the selected position a second switch in parallel with the first-mentioned switch is automatically opened by the sensor so that the driving circuit is disenabled and the time indicated on the clock least time unit time-indicating element is retained. The driving circuit is enabled by manually controlling or closing of the first-mentioned switch upon coincidence of real time, as indicated by a time standard signal, with the time set into the clock. When the driving circuit is energized under manual control it automatically restores itself for the manual and automatic sequential operations necessary to automatically disenable it and enable it in making time settings and corrections.

3,762,158

PROGRESS METER

Henry H. Forrester, Jr., Rt. 1, Box 27F, Ethel, La.

Filed Aug. 25, 1971, Ser. No. 174,858
Int. Cl. G04b 37/12, 5/20
U.S. Cl. 58—152 E 10 Claims



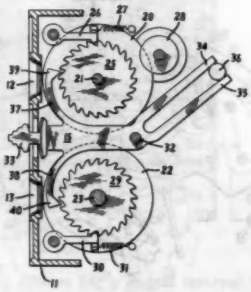
The progress meter provides a progress hand which is moved by a progress shaft, concentric about the conventional hour hand shaft, at some predetermined rate which is some fraction of a revolution per hour. A dial is superimposed on the time piece face graduated in selective rate of progress in correspondence with a predetermined speed reduction ratio between a conventional transmission element axis (in chain of transmission increments with the number of graduations around the dial determined by a built-in reduction ratio between a gear selected for installation on a conventional transmission element and a gear on the progress shaft. Also, adaptation is made whereby the conventional time and alarm setting device may be employed selectively to set the progress hand while overriding the clutch connection normally operative to carry drive to the progress hand from conventional time piece sources.

3,762,159

TIME-SETTING DEVICE FOR SETTING TIMING WHEELS IN A DIGITAL INTERVAL TIMER

Kiyoshi Kitai, Tokyo; Mitsuo Koyama, Yotsukaido-machi; Shogo Kato, Chiba-ken; Yuzuru Takazawa, Tokyo, and Shinji Nagaoka, Yotsukaido-machi, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1972, Ser. No. 307,867
Claims priority, application Japan, Nov. 18, 1971, 46/91888
Int. Cl. G04f 3/02; G04b 19/02
U.S. Cl. 58—2.9 8 Claims



A time-setting device for setting the timing wheels in a digital interval timer comprises an operating lever mounted

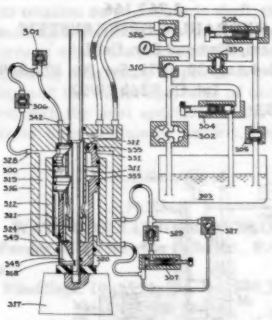
for pivotal movement between a timing wheel of a time-indicating system and a timing wheel of a reference time-indicating system. The operating lever is mounted for pivotal movement in one direction towards one timing wheel and for pivotal movement in the other direction towards the other timing wheel and a biasing spring continuously biases the operating lever into a middle position intermediate the timing wheels. A ratchet wheel is affixed to each timing wheel and a pair of pawls are mounted on oposite sides of the operating lever so that movement of the operating lever towards one timing wheel causes one pawl to engage with one ratchet wheel and effect angular displacement of the ratchet wheel along with its associated timing wheel through predetermined angular increments whereas movement of the operating lever towards the other timing wheel causes the other pawl to engage with the other ratchet wheel and effect angular displacement of the other ratchet wheel along with its associated timing wheel through a predetermined angular increment. Each timing wheel may be selectively positioned in the desired angular position by repeatedly moving the operating lever until the desired position is reached.

3,762,160

HIGH VELOCITY THRUST ACTUATOR

Kurt H. Kramer, 601 West Ave., Sewaren, N.J.

Filed Oct. 6, 1971, Ser. No. 186,852
Int. Cl. F15b *7/00, 21/00*
U.S. Cl. 60—10.5 **23 Claims**



The specification discloses a high velocity thrust actuator comprising a piston chamber which is operated by a hydraulic power unit. The piston chamber is adapted to suddenly produce a large thrust and stroke very rapidly for the purpose of hammering and impact. The sudden thrust is created by releasing high pressure gas onto the face of the piston means. To reset the piston chamber before each impact stroke the power unit pumps hydraulic fluid into the chamber to compress the pressure gas. This done, the hydraulic fluid is evacuated from the piston chamber and the piston can then stroke.

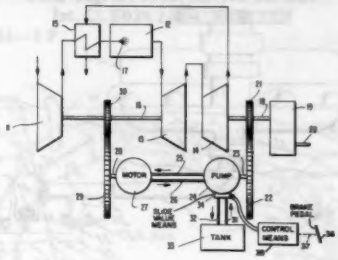
3,762,161

GAS TURBINE FOR THE DRIVE OF MOTOR VEHICLES

Gregor Pennig, Munich, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Feb. 4, 1971, Ser. No. 112,741
Claims priority, application Germany, Feb. 11, 1970, P 20 06 138.5
Int. Cl. F02c *3/06*
U.S. Cl. 60—39.16 **12 Claims**

A gas turbine for the drive of motor vehicles which includes a free output turbine adapted to be connected during braking with the compressor by way of a hydrostatic force-transmitting system consisting of a pump and of a motor, that is



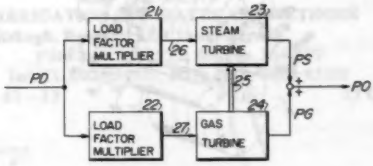
adapted to be selectively engaged and disengaged by filling and emptying the circulatory system thereof.

3,762,162

METHOD OF OPERATING AND CONTROL SYSTEM FOR COMBINED CYCLE PLANTS

Kiyoshi Miura, Ibaraki-ken; Yoshiyuki Nakano, and Koichi Kawatake, both of Hitachi-shi, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed May 16, 1972, Ser. No. 253,836
Int. Cl. F01k *23/00*
U.S. Cl. 60—49 **11 Claims**



In order to improve the efficiency of a heat power plant there are proposed combined cycle plants combining a gas turbine plant and a steam turbine plant as a couple. To improve transient response characteristics and ensure steady normal operation of such combined cycle plants, quick response of the gas turbine plant is effectively utilized. The output capacity of gas turbine plants, though it has been increased in recent years, is still far small compared to steam turbine plants. However, the response of gas turbines to a change of load command is far superior to the steam turbines. Accordingly, when the load command changes a gas turbine plant is adapted to off-set the delay in response of steam turbine plant and the shares are subsequently corrected, thereby improving transient response characteristic and ensuring steady normal operation of the whole combined cycle plant.

3,762,163

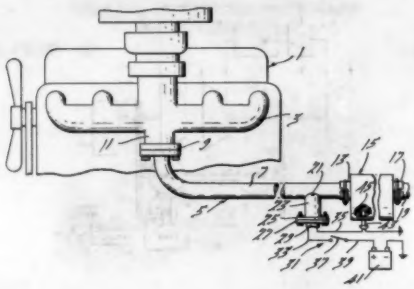
BYPASS FOR CATALYTIC REACTOR

Paul A. Johns, Grass Lake, Mich., assignor to Tenneco Inc., Racine, Wis.

Filed June 8, 1972, Ser. No. 260,764
Int. Cl. F01n *3/14*
U.S. Cl. 60—277 **9 Claims**

A catalytic exhaust system for an internal combustion engine has an emergency reactor by pass circuit that includes a

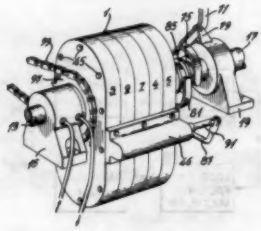
blow-out wall located in the gas passage on the upstream side of the reactor and which blows out in response to the destruction of an explosive charge which is energized by closing of a thermal switch that senses the temperature inside the reactor.



3,762,164
AUTOMOTIVE TRANSMISSION

Georges Henri Bessette, 209 Boulevard du Seminaire, Saint-Jean, Quebec, Canada

Filed Mar. 17, 1972, Ser. No. 235,678
Int. Cl. F16h *39/48*
U.S. Cl. 60—425 **7 Claims**



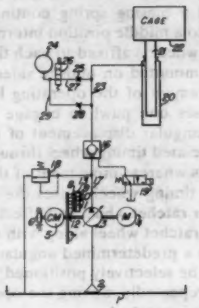
A transmission to interconnect a driving shaft and a driven shaft including a casing mounted on both shafts and having two fluid-tight gear cases each housing a pair of gears meshing with one another. Each pair of gears defines with the respective case an inlet and an outlet cavity at the meshing station. One gear of one pair is mounted on the driving shaft to be rotated thereby while one gear of the other pair is mounted on the driven shaft to rotate it. The remaining gears are mounted on an intermediate shaft for rotation in unison. A closed hydraulic circuit interconnects the inlet and outlet cavities and includes a pressure control valve and is so constructed and arranged that operation of the valve controls the pressure condition in the cavities to control the condition of application of the driving torque on the driven shaft.

3,762,165
HYDRAULIC ELEVATOR APPARATUS

Mitsuaki Takenoshita, Katsuta, and Fumio Fujisawa, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 30, 1971, Ser. No. 203,194
Claims priority, application Japan, Feb. 26, 1971, 46/9365; May 17, 1971, 46/32519; Dec. 7, 1970, 45/107573
Int. Cl. F15b *15/18*
U.S. Cl. 60—445 **8 Claims**

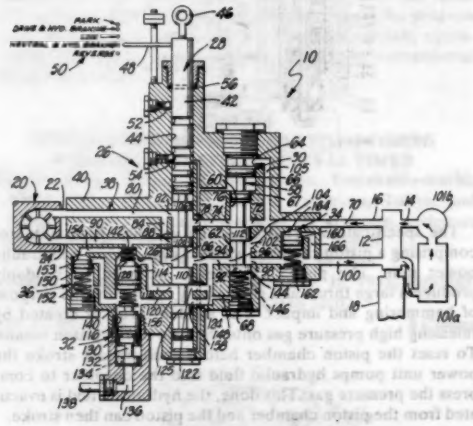
A hydraulic elevator apparatus having an oil hydraulic variable displacement pump capable of functioning also as an oil hydraulic motor and being arranged so that a pressurized oil is supplied to a hydraulic cylinder by the said oil hydraulic pump to cause ascension of a plunger, and that the pressurized oil is discharged from the hydraulic cylinder by the said oil hydraulic motor to cause descension of the cage.



3,762,166
HYDRAULIC DRIVE SYSTEM

James A. Dunham, Diamond Bar, Calif.

Filed Aug. 20, 1971, Ser. No. 173,359
Int. Cl. F16h *39/02*
U.S. Cl. 60—493 **10 Claims**



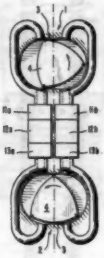
A hydraulic drive system for automotive vehicles and other applications. The drive system has a hydraulic pump operable through a range of speeds between selected idling and high speeds, a rotary hydraulic motor, and a manual shift control valve for selectively communicating the pump and motor parts to place the drive system in various operating modes, such as drive, low, neutral and reverse. Novel features of the drive system reside in its unique hydraulic circuitry, in the arrangement and construction of its shift control valve, in an idling valve which permits the pump to run at idling speed without driving the motor, and in a hydraulic braking arrangement for producing a hydraulic braking action on the motor both manually and when coasting.

3,762,167

HOT-GAS ROTARY PISTON ENGINE

Jurgen Wahnschaffe, Cologne, and Eberhard Braun, Waiblingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed Apr. 12, 1971, Ser. No. 133,121
Claims priority, application Germany, Apr. 10, 1970, P 20 17 239.8
Int. Cl. F02g *1/04*
U.S. Cl. 60—24 13 Claims



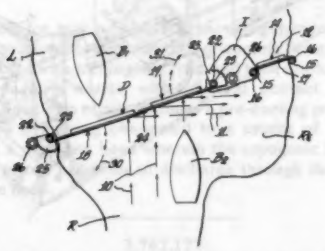
A hot gas engine constructed as rotary piston engine of trochoidal construction, which includes two rotary piston engines, of which one is constructed as hot gas unit and the other as cold gas unit; each rotary piston engine includes a housing casing of epitrochoidal shape with a two-arched running surface, along which slides a triangular piston with its piston corners during its rotation on an eccentric shaft; the housing casing is provided within the area of its minor axis with inlet and outlet apertures of which the inlet and outlet apertures are arranged substantially diagonally opposite one another in the housing casing and the outlet apertures of one piston engine are connected with the inlet apertures of the other and vice versa by way of lines containing heaters, recuperators and coolers.

3,762,168

WATER POLLUTION CONTROL

Richard L. Pardee, 8716 Newton Falls Rd., P.O. Box 4, Wayland, Ohio

Filed Sept. 10, 1971, Ser. No. 179,343
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F 2 Claims



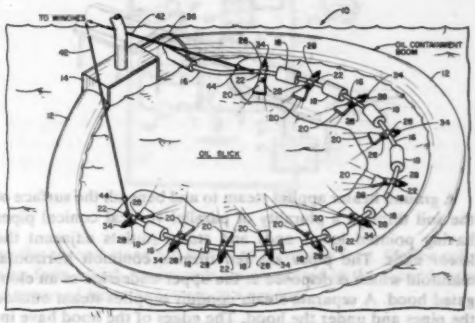
The invention relates to devices for removing pollutants from water, particularly navigable streams, rivers and lakes. In one form, the invention comprises a skimming device which is disposed at an acute angle to the flow of water and is operable to direct the pollutants skimmed from the water to a collecting area such as a reservoir, from where it may be removed from time to time. In another form, the device is operable to protect an off-shore working area, such as an oil well rig, against pollution of the water, by disposition of a skimming device in surrounding relation with respect thereto.

3,762,169

FLOATING WATER JET FOR OIL SLICK CONTROL

Douglas J. Graham, Port Hueneme, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 23, 1972, Ser. No. 283,021
Int. Cl. E02b *15/04*; B05b *1/04*
U.S. Cl. 61—1 F 6 Claims



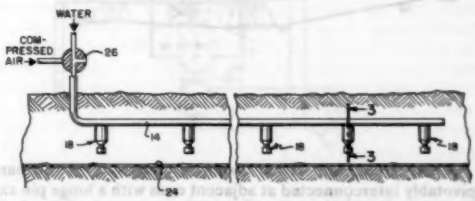
A device to direct floating oil into a recovery mechanism comprising a flexible rubber hose having attached floats positioned at spaced intervals. Water jets are operatively connected to the hose between the floats, and counterweights are added to uniformly balance the unit. A water pump provides water to the hose which is sprayed by the jets against the oil slick, forcing it to the recovery mechanism.

3,762,170

IRRIGATION APPARATUS AND METHODS

Davis Fitzhugh, Raspberry Ln., Augusta, Ark.

Filed Apr. 11, 1972, Ser. No. 243,019
Int. Cl. E02b *13/00*; B05b *1/30*; F16k *15/00*
U.S. Cl. 61—13 11 Claims



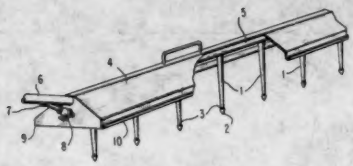
Methods and apparatus are provided for above-surface or preferably sub-surface drip irrigation of areas of land of different sizes, and in a manner in which individual increments of water can be expelled in controlled amounts into the soil along a supply line for effective irrigation simultaneously with a substantial reduction in the total quantity of water used in comparison with prior arrangements for the same amount of land. Also included are means for the sequential activation of the system to provide for any number of controlled expellations during a time period. In addition, provision is made for expelling the same quantity of water at each point along the system regardless of the terrain of the land being irrigated and in the absence of the need for expensive land levelling procedures. The methods and apparatus herein are especially appropriate for use with manually operated control equipment in undeveloped areas.

3,762,171

GROUND HEATER

Ingolf Bjorheim, Verdalen, Kleppe, and Brynjulf Steinsoy, Eikeveien 28, Sandnes, both of Norway

Filed Nov. 3, 1971, Ser. No. 195,083
Claims priority, application Norway, Nov. 3, 1970, 4175/70
Int. Cl. E02d 3/00
U.S. Cl. 61—36 A 4 Claims



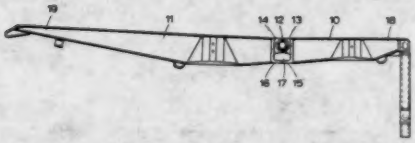
A ground heater applies steam to and beneath the surface of the soil through a plurality of parallel vertical conical pipes having pointed lower ends and steam outlets adjacent the lower ends. The pipes are fed from a common horizontal manifold which is disposed at the upper underside of an elongated hood. A separate steam conduit supplies steam outside the pipes and under the hood. The edges of the hood have interfitting flanges for interconnecting a plurality of heaters side-by-side.

3,762,172

MINE ROOF SUPPORT BAR ASSEMBLIES

Norbert Holken, Altlunen; Harry Rosenberg, Ludinghausen; Erich Hoffmann, and Horst Konig, both of Altlunen, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Sept. 10, 1971, Ser. No. 179,373
Claims priority, application Germany, Sept. 11, 1970, G 70 33 832.8
Int. Cl. E21d 17/00
U.S. Cl. 61—45 C 2 Claims



A mine roof support bar assembly composed of two bars pivotably interconnected at adjacent ends with a hinge pin extending through lugs formed at these ends of the bars. The axis of the pin lies above the longitudinal axes of the bars when the latter are arranged in a co-linear horizontal position. The adjacent ends of the bars have interengageable extensions disposed beneath the lugs with a cavity formed between the extensions and the lugs. The extensions prevent the bars from pivoting downwards away from the horizontal position while the cavity can receive an insert body which is used to secure the bars in an upwardly inclined position.

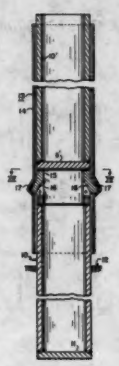
3,762,173

PILE COUPLING AND METHOD OF PILE DRIVING

Richard O. Marsh, 701 Standard Life Bldg., Pittsburgh, Pa.

Filed June 3, 1971, Ser. No. 149,619
Int. Cl. E02d 5/28, 7/28; F16l 13/14
U.S. Cl. 61—53 10 Claims

The specification discloses novel means for coupling sections of pile and a novel method of driving pile utilizing thin-wall composite pile section. The coupling comprises a thin-wall sleeve with a telescoping thick-wall ring or collar mechanically anchored within the sleeve. Tabs integrally formed in the collar, or the entire collar itself, are expanded within the sleeve to form corresponding anchoring pockets in the sleeve thereby mechanically interlocking the collar and sleeve. The coupling is adapted for use in coupling successive



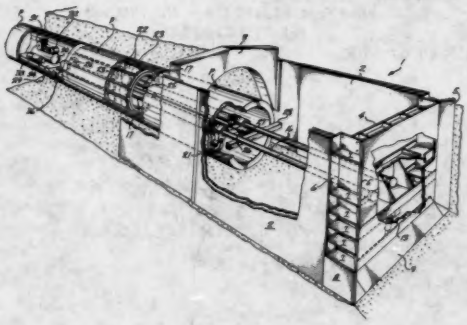
sections of thick-wall tubular pile or in coupling thin-wall tubular composite pile or thick-wall tubular pile. Use of the thin-wall tubular composite pile enables employment of a novel method for driving pile which eliminates the necessity for retaining a succeeding thick-wall tubular pile after the initial one is driven home.

3,762,174

PROTECTIVE INCHING SHIELD FOR PIPE-LAYING

Tyman H. Fikse, Enumclaw; Richard E. Scheumann, and Chester H. Johnson, both of Seattle, all of Wash., assignors to Constructors-Pamco, Seattle, Wash.

Filed July 17, 1972, Ser. No. 272,133
Int. Cl. E01g 3/02
U.S. Cl. 61—85 17 Claims



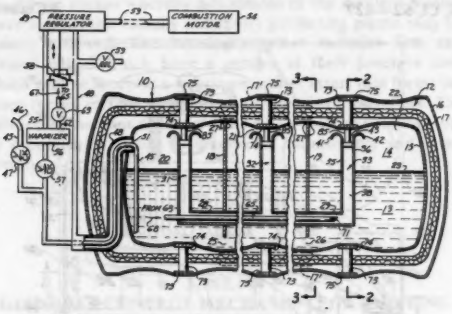
The forward end of a large pipe being laid in a trench opens into an open-topped casing. A fluid pressure jack received within the forward portion of the pipe being laid reacts between the forward wall of the casing and a tube within the pipe and anchored to it by expansion means. Extension of the jack to force the casing forward relative to the pipe is followed by retraction of the jack means sufficiently to enable the next pipe section to be placed between the forward end of the pipe and the forward casing wall. A winch anchored from the pipe can draw a cross-piece spanning the open end of the pipe toward the laid pipe for setting the last laid pipe section.

3,762,175

LIQUEFIED GAS CONTAINERS

Peter Jones, 2211 Verde Oake Dr., Hollywood, Calif.

Filed July 8, 1971, Ser. No. 160,635
Int. Cl. F17c 7/02
U.S. Cl. 62—45 39 Claims



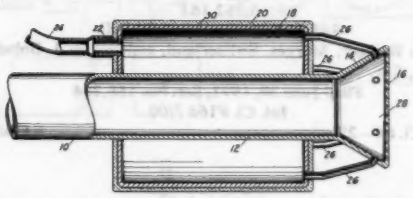
A container for liquefied gas has at least two separate compartments for containing the gaseous phase. Gas ducts are provided for conducting gas of the gaseous phase between the compartments in heat-exchange relationship with the liquefied gas.

3,762,176

METHOD AND APPARATUS FOR MAKING SNOW

Burton Frank Coggins, Jr., P.O. Box 250, Elberton, Ga.

Filed Sept. 18, 1969, Ser. No. 859,110
Int. Cl. F25c 3/04
U.S. Cl. 62—74 1 Claim



A method for making artificial snow independent of ambient temperature conditions by pre-cooling water through heat exchange with a cryogenic fluid and then discharging the water through a nozzle with physical contact with the cryogenic fluid. The nozzle includes a pre-cooling portion surrounded by a housing connected to a source of cryogenic liquid and a perforate head wherein the cryogenic liquid and water are mixed just prior to discharge through the perforations of the head.

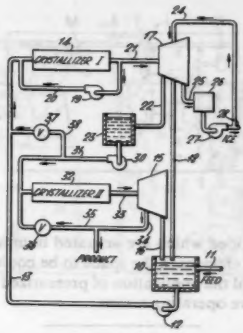
3,762,177

MULTI-STAGE CONCENTRATION OF COFFEE

Neophytos Ganiaris, 3671 Husdon Manor Ter., Riverdale, N.Y.

Division of Ser. No. 652,532, July 11, 1967, Pat. No. 3,620,034, which is a continuation-in-part of Ser. No. 572,365, Dec. 8, 1965, abandoned, which is a continuation-in-part of Ser. No. 321,020, Nov. 4, 1963, Pat. No. 3,283,522. This application May 12, 1971, Ser. No. 142,666
Int. Cl. B01d 9/04
U.S. Cl. 62—123 1 Claim

In a staged freeze concentration process for concentrating coffee solution, ice crystals are removed from the system after the first stage from less concentrated coffee solution. Ice crystals removed from the more concentrated coffee solution in the second stage are added to incoming feed. Coffee solution from which ice crystals are separated in the second stage is removed from the system as a product.

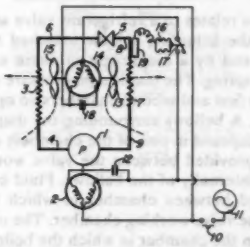


3,762,178

COOLING APPARATUS WITH DELAYED OPERATION BLOWER MEANS

Kaitti Yamada, Kusatsu; Yoshiyuki Morikawa, Otsu, and Hidenosuke Matsumoto, Kusatsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed June 28, 1971, Ser. No. 157,542
Claims priority, application Japan, June 30, 1970, 45/57633
Int. Cl. F25d 17/00
U.S. Cl. 62—157 2 Claims



A cooling apparatus for cooling the interior of a room, in which a blower is started for introducing air cooled by a cooling means into the room after the cooling means for cooling the air in the room is cooled below a predetermined temperature, so that the interior of the room is free from bad odour during starting period.

3,762,179

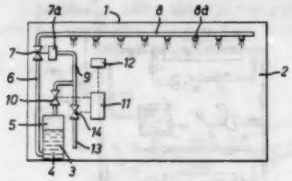
VALVE ARRANGEMENT FOR A COOLING SYSTEM

Hans Jorgen Jespersen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Oct. 5, 1971, Ser. No. 186,610
Claims priority, application Germany, Oct. 6, 1970, P 20 48 963.8
Int. Cl. F25b 19/00
U.S. Cl. 62—223 1 Claim

The invention relates to a valve assembly for a cooling system. The cooling system has a container containing liquid nitrogen under pressure which is to be distributed in vapor form to an enclosed space to be cooled. The valve assembly

includes a main valve and pressure operated means for operating the main valve which means utilizes the vapor pressure of the nitrogen in the container referred to above. Two auxiliary



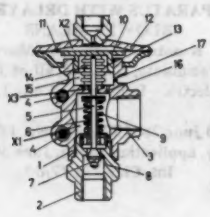
valves are provided which are actuated in unison in response to temperature changes in the space to be cooled. The auxiliary valves control the application of pressurized nitrogen vapor to the main valve operating means.

3,762,180

REFRIGERANT VALVE

Hans Jorgen Jespersen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Oct. 5, 1971, Ser. No. 186,615
Int. Cl. F25b *41/04*
U.S. Cl. 62—223 2 Claims



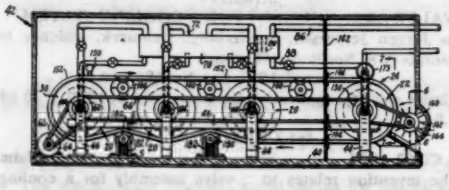
The invention relates to a refrigerant valve assembly of the type in which the actuating spindle attached to the valve is loaded at one end by a diaphragm pressure unit and at the other end by a spring. The diaphragm pressure unit includes a diaphragm with first and second chambers on opposite sides of the diaphragm. A bellows surrounding the diaphragm end of the spindle is disposed in one of the chambers and fluid communication is provided between the valve working chamber and the space internally of the bellows. Fluid communication is also provided between chamber in which the bellows is disposed and the valve working chamber. The object is to provide a dry gas in the chamber in which the bellows is disposed to prevent icing of the end of the spindle due to condensation.

3,762,181

BELT ICE MAKER

Raymond H. Leidig, Rt. 3, Box 504, Lake Charles, La.

Filed May 17, 1971, Ser. No. 144,097
Int. Cl. F25c *1/14*
U.S. Cl. 62—320 5 Claims



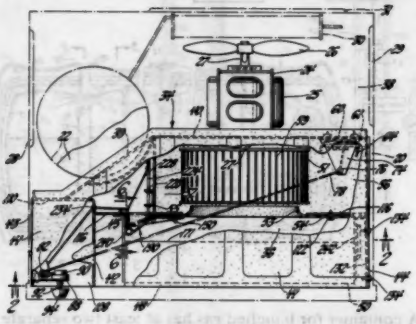
A plurality of freezing drums, a heating drum, an endless belt rollably secured to the heating and freezing drums, and rotating blades at one end of the belt.

3,762,182

FRESH AIR FEATURE FOR ROOM AIR CONDITIONER

John H. Loos, Dayton, and Emerson L. Wark, Vandalia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 25, 1972, Ser. No. 283,749
Int. Cl. F25d *17/06*
U.S. Cl. 62—427 3 Claims



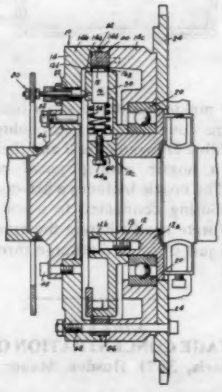
An integrally hinged folding panel door assembly pivotally secured to a partition wall of a room air conditioner so as to be biased in a first folded position operative for closing a fresh air inlet communicating with the inlet orifice of the evaporator blower wheel scroll housing by means of the evaporator plenum chamber. The folding panel door assembly when actuated to an overcenter fresh air open position being operative to block-off a portion of the evaporator surface to increase the negative pressure differential in the evaporator planum chamber to induce an increased flow of make-up or fresh air being drawn into the evaporator scroll housing inlet orifice.

3,762,183

SAFETY DEVICE COUPLING

Edwin Bolliger, Morges, Switzerland, assignor to J. Bobst & Fils, S.A.

Filed June 30, 1971, Ser. No. 158,254
Int. Cl. F16d *7/00*
U.S. Cl. 64—29 8 Claims



Efficiencies of construction, operation and maintenance are provided by an overload release coupling comprising a rotatable housing means having a driven member journalled therein with the driven member having radially extending resiliently biased piston means that engage mating recess areas on an inner surface area of the housing means. Should an excessive load prevent the housing means and an attached sprocket

wheel from moving, the piston would overcome the resilient biasing force and be forced out of their recessed seats to prevent injury to persons and apparatus. A microswitch activated by the unseating stops the machine at once. An adjustment means generally radially aligned with the piston means and a resilient means extends into an open central portion of the driven means whereby adjustment of the resilient biasing force against the radially outwardly projecting piston may be readily effected. The housing member includes first and second halves which have a groove at their juncture area which groove receives a wearing member insert that forms the inner recess surface which engages the piston members. The halves and insert as well as a chain wheel may be held together by a connector means to allow ease of assembly and disassembly.

3,762,184

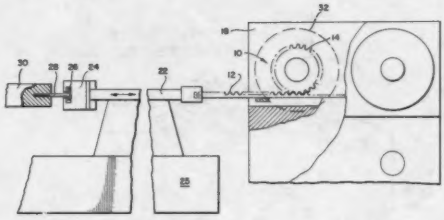
GUIDE BAR CONTROL MECHANISM FOR KNITTING MACHINES

Paul Elliot Schur, New York, N.Y.; Peter Edward Gallotello, Danbury, Conn.; Joseph Frederick Keuler, Franklin Square, L. I., N.Y., and James Milton Carter, Pensacola, Fla., assignors to Rome Knitting Mills, Inc., Bronx, N.Y.

Filed May 1, 1972, Ser. No. 248,849

Int. Cl. D04b *23/00, 27/00, 15/66*

U.S. Cl. 66—86 R **8 Claims**



The present invention provides a control mechanism for operating a guide bar of an automatic knitting machine. Guide bar movement is controlled by a stepping motor coupled to the guide bar by a rack and pinion mechanism and operated by a computerized control system. The computerized control system includes a memory circuit for receiving and storing information defining the operation of the stepping motor required for movement of the guide bar to achieve a desired knit fabric design.

3,762,185

BOBBIN CRAFTING AND THREAD FEEDING DEVICE FOR CIRCULAR KNITTING MACHINES

Gerhard Schmidt, and Werner Jansch, both of Stuttgart-Vaihingen, Germany, assignors to Firma Franz Morat GmbH, Stuttgart-Vaihingen, West Germany

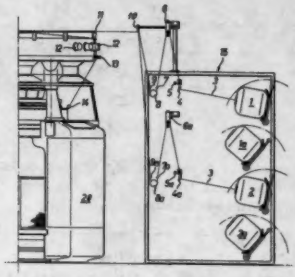
Filed Mar. 12, 1971, Ser. No. 123,658

Claims priority, application Germany, Mar. 17, 1970, P 20 12 617.4

Int. Cl. D04b *15/48*

U.S. Cl. 66—125 R **1 Claim**

For use in a knitting machine having at least one thread brake for every thread pulled off a bobbin means and non-positive thread feeder means, a bobbin grating having housed therein a thread feeder device associated with every non-positive thread, said thread feeder device transporting the thread with at least the same speed as the associated thread feeder means on said knitting machine.



3,762,186

KNITTED FABRIC

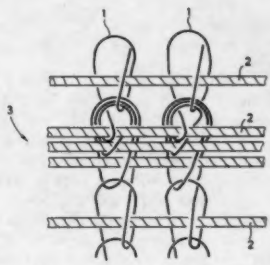
Karl Kohl, Chlorodontstrasse 10, Obertshausen, Germany

Filed Mar. 27, 1972, Ser. No. 238,121

Claims priority, application Germany, Mar. 26, 1971, P 21 14 700.2

Int. Cl. D04b *7/14*

U.S. Cl. 66—190 **1 Claim**



A knitted fabric of warp wales and weft threads in interengagement with the loops of the warp wale stitches. At intervals, a plurality of the weft threads are bunched together in interengagement with the loops of a single stitch in each warp wale.

3,762,187

APPARATUS FOR THE STEAM TREATMENT OF MATERIALS

Heinz Fleissner, and Gerold Fleissner, both of Egelsbach near Frankfurt/Main, Germany, assignors to Vepa AG

Continuation of Ser. No. 870,794, Sept. 8, 1969, abandoned, which is a division of Ser. No. 655,549, July 24, 1967, Pat. No. 3,503,231. This application July 7, 1971, Ser. No. 160,504

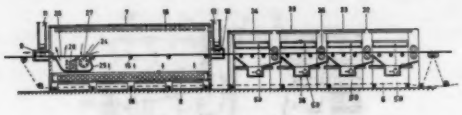
Claims priority, application Germany, July 22, 1966, V 31559; Aug. 20, 1966, V 31757; Sept. 21, 1966, V 31982; Sept. 24, 1966, V 32013; Mar. 25, 1967, V 33317

Int. Cl. D06c *1/06, 27/00*

U.S. Cl. 68—5 E **14 Claims**

The present disclosure relates to process and apparatus for the steaming of materials, for example textile materials, as applied to shrinking, dyeing, bleaching, setting, finishing and similar treatment processes. The apparatus of the

present disclosure includes at least one treatment chamber and a steam-permeable conveying means, preferably a con-



veyor belt made of a metal cloth and/or at least one sieve drum, which is used to guide the material being treated through the treatment chamber.

3,762,188

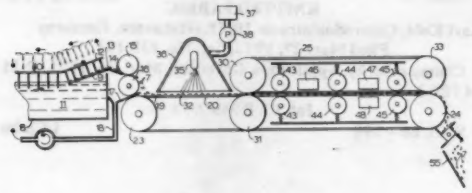
APPARATUS FOR TREATING TEXTILE FIBERS IN STAPLE FIBER FORM

William Francis Bernholz, Wayne; Roop Nahta, Parsippany-Troy Hills, and John Percy Redston, Montclair, all of N.J., assignors to PVO International Inc., San Francisco, Calif.

Filed Apr. 5, 1972, Ser. No. 241,167

Int. Cl. B05c *3/136*

U.S. Cl. 68—19.1 **12 Claims**



A continuous lower apron is matched with a continuous upper apron, both of which are driven from an inlet end toward an outlet end, but the upper apron is shorter than the lower apron to provide an exposed portion at the inlet end of the upper apron. Staple fibers are fed to the inlet end of the lower apron and are there sprayed with a treating liquid directed toward the upper surface of the lower apron. The sprayed fibers then pass in between the two aprons, while a series of squeeze rolls located along them urge the aprons together and distribute the sprayed liquid upon the fibers and into them. The aprons perferably comprise imperforate rubber belts, the lower apron preferably being of harder rubber than the upper one, both belts having rough surfaces to discourage adherence of wet fibers to them. The lower apron may have a series of ridges extending diagonally and lengthwise across it; the valleys between ridges distribute treating liquid that misses the fibers and helps to treat the underpart of the fiber groups.

3,762,189

APPARATUS FOR WET PROCESSING OF TEXTILE FABRICS

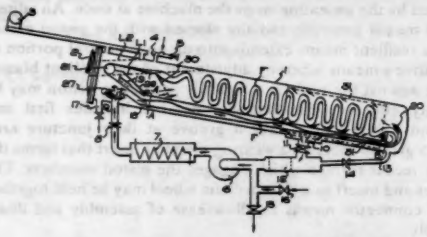
Frank Hubert Marsh, Scarcroft, nr. Leeds, and James Kevin Hegarty, Leeds, both of England, assignors to Platt International Limited, Leeds, England

Filed Mar. 13, 1972, Ser. No. 234,222

Int. Cl. B05c *3/134, 3/172*

U.S. Cl. 68—177 **6 Claims**

In an apparatus for wet processing of textile fabrics, a vessel of elongated and substantially straight tubular form is slightly inclined to a horizontal plane and contains a similarly inclined open-ended conduit and a length of fabric to be treated is led down through the conduit and then in a multi-looped arrangement back up the vessel and joined in endless form to re-enter the conduit. The vessel contains treatment liquid and this is forcefully projected down the conduit to transport the fabric therethrough and thereby cause the fabric to circulate through the vessel. Liquid may also be projected against the fabric



leaving its multi-looped arrangement. Preferably the cross-sectional shape of the conduit becomes progressively broader and flatter approaching its outlet end.

3,762,190

APPARATUS FOR TREATING HIDE AND LEATHER PIECES IN TANNERIES

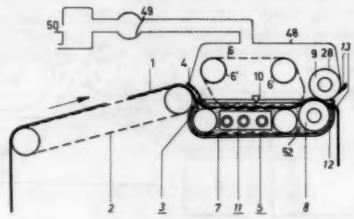
Holm Ruffer, Uerikon-stafa; Willy Kempin, Uetikon am See, and August Kraus, Mannedorf, all of Switzerland, assignors to Staub & Co. AG, Mannedorf, Switzerland

Division of Ser. No. 851,654, Aug. 20, 1969. This application July 19, 1971, Ser. No. 163,661

Claims priority, application Switzerland, Aug. 26, 1968, 12757/68; Oct. 31, 1968, 16245/68

Int. Cl. C14c *15/00*

U.S. Cl. 69—32 **32 Claims**



An apparatus for continuously treating hide, leather and pieces of similar material by subjecting the pieces to be treated to exposure to a liquid treating agent selected to effect at least one of a tanning, post-tanning, oiling, fat-liquoring, surface dyeing, through dyeing and impregnating treatment in which pieces to be treated are successively fed to and through a liquid treating agent containing a treatment zone while the movement of the pieces through the zone is so guided that all surfaces of the pieces are exposed to umimpeded contact with the liquid treating agent and just prior to leaving the treatment zone, the leading ends of the successive pieces are grasped by and fed through cooperating pressing rollers to squeeze out excess liquid therefrom as they are leaving the treatment zone. The pieces leaving one treatment zone can be fed to and through a succeeding treatment zone containing the same or a different liquid treating agent and the intensity of the treating action can be increased by heating and/or subjecting the liquid within the zone to ultrasonic excitation or vibration.

3,762,191

DEVICE FOR LOCKING A CRASH HELMET TO A VEHICLE

James P. Smith, Memphis, Tenn., assignor to Robert O. Manspeaker, Memphis, Tenn., a part interest

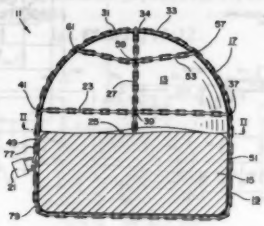
Filed Dec. 28, 1971, Ser. No. 212,995

Int. Cl. E05b *69/00*

U.S. Cl. 70—18 **4 Claims**

A device for lockingly attaching a crash helmet to a two-wheeled vehicle, e.g., a motorcycle. The device includes dura-

ble hardened elongated flexible members, e.g., chain segments, suitably assembled and attached one to the other constituting a netlike structure for capturing the helmet by embracing certain portions of the outer surface thereof. In addition, there is flexible elongated holding structure attached to the net and a



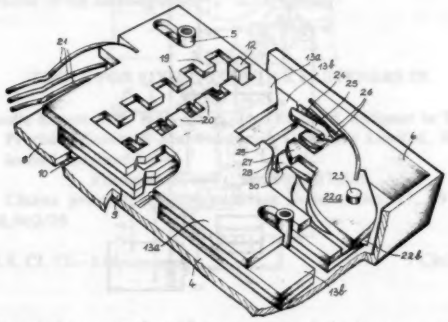
securing device, e.g., a padlock, interposed between sections of the holding structure for allowing the holding structure to first be suitably directed to circumferentially embrace the appropriate portion of the vehicle, e.g., the saddle, prior to attaching the securing device thereto, thus preventing unwarranted removal of the helmet from the vehicle.

3,762,192

ANTILOCK-PICKING DEVICE

Deo Errani, Faenza, Italy, assignor to S.P.A.C.I.S.A. Costruzioni Italiane Serrature Affini, Via Oberdan, Faenza (Prov. of Ravenna), Italy

Filed Oct. 27, 1971, Ser. No. 192,983
Int. Cl. E05b *25/00*
U.S. Cl. 70—352 2 Claims



An antilock-picking device for lever tumbler locks comprising a plurality of tumblers arranged to engage with a sliding bolt, comprising at least two shaped plates arranged along the same plane as two respective tumblers and mounted for rotation along an axis, each of the plates being provided an extension which is kept in engagement with an edge of the related tumbler coplanar with the other plate by resilient means and with a hook portion which when one of the tumblers is disengaged from the related extension is hooked with the coplanar tumbler due to the action of the said spring means thus preventing the lifting or raising movement thereof.

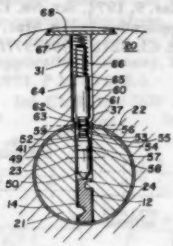
3,762,193

PICK-RESISTANT LOCK

Richard Hucknall, 3 Fairview Ave., Great Neck, N.Y.

Filed Nov. 9, 1971, Ser. No. 196,966
Int. Cl. E05b *15/14*
U.S. Cl. 70—419 13 Claims

A cylinder lock having a plurality of pin assemblies selectively configured to engage a shoulder within the cylinder bore in the event that an attempt is made to pick the lock. In general, each pin assembly comprises a driver portion, a center portion, and a lower portion. The center and driver portions each contain unique transverse grooving which



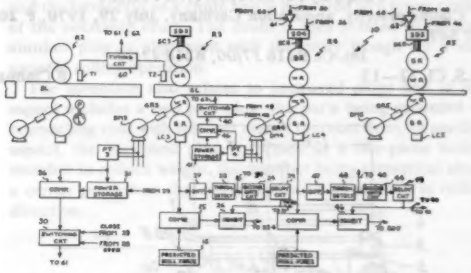
cooperates with the aforementioned shoulder to prevent pin movement if rotational pressure is applied to the plug without first inserting the proper key.

3,762,194

CONSTANT SPEED DRIVEN CONTINUOUS ROLLING MILL

Hugh S. Maxwell, Wichita, Kans., assignor to General Electric Company, Salem, Va.

Filed June 28, 1972, Ser. No. 266,895
Int. Cl. B21b *37/00*
U.S. Cl. 72—8 11 Claims



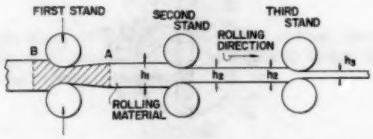
A continuous rolling mill having tandem stands driven by constant speed motors is described wherein the pattern of roll gap of a downstream stand is adjusted as a function of the measured drive power of the adjacent upstream stand or stands. Prior to threading, all gaps are preset for the drafting schedule in a conventional manner, manually or automatically, with recognition of usual parameters such as stand temperatures, roll diameters, and the width, thickness, temperature and physical characteristics of the incoming metal. Each gap except that of the first stand is automatically adjusted, if necessary, an instant after its threading as a function of measured drive power change or changes at the preceding stand or stands caused by its threading. Adjustment maintains interstand tension or compression at near-zero value to inhibit reduction in metal width or mill cobble. Drive power measurement of each stand after the mill is completely threaded results in periodic vernier gap adjustments to maintain acceptable power distribution between stands.

As applied to hot strip steel roughing mills, and particularly as applied to the last few stands, the system makes possible a combination of tandem arrangement and AC synchronous motor drive, matching conventional mill capability but using simpler electric equipment of substantially lower first cost which can be accommodated by a smaller mill building.

3,762,195
THICKNESS CONTROL APPARATUS FOR ROLLING MILL

Hidehiro Kitanosono, and Takeaki Kubo, both of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1971, Ser. No. 122,368
Claims priority, application Japan, Mar. 9, 1970, 45/19344
Int. Cl. B21b *37/00, 37/14*
U.S. Cl. 72—11 **11 Claims**

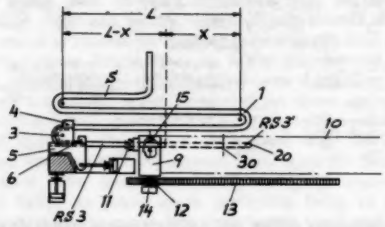


A thickness control apparatus for multi-stand rolling mills wherein the thickness instruction is changed during rolling. When the rolling material reaches a stand at which the change of the thickness of the rolling material is to be effected, the gap or opening of the stand is changed, and at the same time, the roll speed of the previous stand is changed, whereby the tension of the rolling material between both of the stands is made equal to the tension in the schedule before changing the thickness.

3,762,196
PIPE BENDING MACHINE

Dietrich Kempken, Am Buttendict 41, Wesel-Obrighoven, Germany

Filed July 26, 1971, Ser. No. 166,151
Claims priority, application Germany, July 29, 1970, P 20 37 549.9
Int. Cl. B21b *37/00*; B21d *43/28*
U.S. Cl. 72—12 **8 Claims**



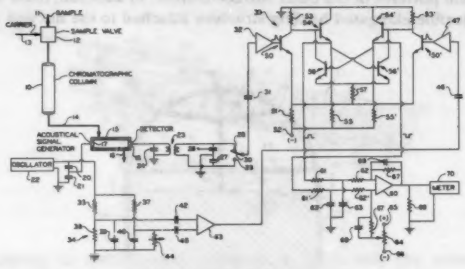
An electronically controlled, pipe bending machine for making a plurality of bends on individual segments of straight pipes which are welded together to form a coiled pipe assembly. The machine is provided with a carrier which measures the individual pipe shanks, grips the pipes, and moves each individual piece into the bending machine, where the pipes are bent. Alternate embodiments are disclosed.

3,762,197
ACOUSTICAL DETECTING APPARATUS

Lewis B. Roof; Harold M. Neer, and Marvin C. Burk, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 14, 1970, Ser. No. 72,025
Int. Cl. G01n *29/02*
U.S. Cl. 73—24 **3 Claims**

Changes in composition of a fluid stream are detected by passing the stream through a chamber having an acoustical signal generator spaced from a detector. The generator is actuated by an oscillator. Signals from the oscillator and the detector are applied to the respective input terminals of a flip-flop circuit. A measurement of the D.C. component of the

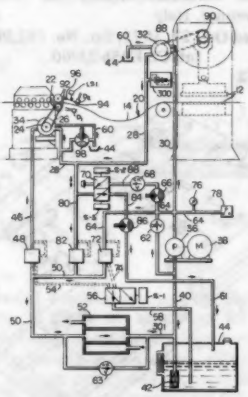


output signal from the flip-flop circuit provides an indication of changes in composition of the fluid stream.

3,762,198
APPARATUS AND METHODS FOR HANDLING STRIP MATERIAL

Eugene C. Bair, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Mar. 24, 1972, Ser. No. 237,827
Int. Cl. B21d *1/02*
U.S. Cl. 72—28 **19 Claims**



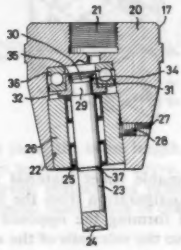
Apparatus includes strip material supply means, a press, and a straightening roller stand (i.e., a straightener having rollers) disposed adjacent to a mechanical press or other material processing device to which strip material is introduced in discrete steps. The strip material is fed from a reel through straightening rollers and then to the press die set, with a slack loop of material in a temporary material storage locale between the straightening rollers and the die set. A positive displacement fluid motor is used to drive the straightener, the fluid motor being connected with fluid flow control means that in turn are controlled in synchronism with operation of the press or other material processing device. A supercharging pump maintains the fluid system charged while the pump, in effect, meters fluid to the motor. Hydraulic circuit means are provided to "fine tune" the hydraulic system and synchronize the fluid motor in a desired manner. Detector means are provided and control the slack loop to maintain it within predetermined limits. Means associated with the detector means operate to divert or otherwise control leakage fluid from the motor inlet when the slack loop exceeds a predetermined maximum length, and to supply additional fluid to the fluid motor inlet when the slack loop shortens to less than a predetermined minimum length.

3,762,199

RIVET HEAD FORMING TOOL

Seiichi Yoshikawa, No. 11, 2-chome, Morikawachi-hondori, Higashi-Osaka-shi, Osaka-fu, Japan

Filed Apr. 14, 1972, Ser. No. 244,096
Claims priority, application Japan, Feb. 19, 1972, 47/20853; Feb. 19, 1972, 47/20854
Int. Cl. B21j *15/12*
U.S. Cl. 72—67 3 Claims



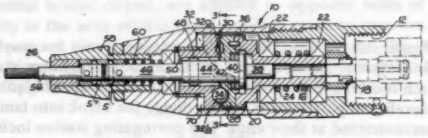
A rivet head forming tool has a base body having a recessed hole slanted outwardly from the center of the lower end thereof. A cylindrical body is fitted securely in the recessed hole, and a forming shaft having an annular groove at the upper portion thereof is rotatably mounted in the cylindrical body. A collar having a shoulder on the inner periphery thereof is mounted between the bottom of the recessed hole and the cylindrical body, the forming shaft being inserted in the collar and being retained by means of a spring rod inserted between the inner periphery of the collar and the annular groove of the forming shaft.

3,762,200

TOOLS FOR FIXING TUBULAR FASTENERS IN POSITION

Leslie Ernest Still, Wolverhampton, England, assignor to The Precision Screw & Manufacturing Company Limited, Willenhall, England

Filed Oct. 8, 1971, Ser. No. 187,805
Claims priority, application Great Britain, Oct. 27, 1970, 50,902/70
Int. Cl. B21j *15/16*
U.S. Cl. 72—114 7 Claims



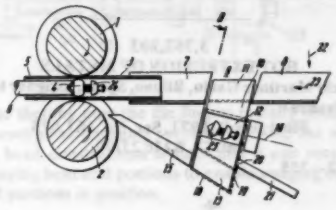
The disclosure provides a tool for crimping tubular internally screw-threaded fasteners by axially collapsing the fasteners to create a bulge, in which a screw carried by the tool is engaged with the fastener and is then held stationary and axially displaced, the screw being unscrewed from the fastener at the conclusion of the displacement, and these operations being effected by including a lost-motion device in the drive to the screw. The lost-motion device disclosed includes a pair of discs trapping a drive ball between them so that rotation of one disc rolls the ball around a cam track between the discs and separates the discs to provide the axial displacement, drive being resumed when the ball reaches the ends of the tracks.

3,762,201

PLUG CHANGING MECHANISM FOR ROLLING MILLS, AND PLUGS FOR THE SAME

Wolfram Schonfeld, Merrbusch, and Armin Philipps, Dusseldorf, both of Germany, assignors to Mannesmannrohren-Werke A.-G., Mannesmann-Hochhaus, Germany

Filed Jan. 26, 1972, Ser. No. 220,957
Claims priority, application Germany, Dec. 17, 1971, G 71 48 215.0; Dec. 17, 1971, P 21 63 818.6
Int. Cl. B21b *17/08*
U.S. Cl. 72—209 11 Claims



The invention relates to mechanism for mechanically changing plugs in tube mills. Plugs are carried in peripheral pockets formed in a drum and the latter is disposed for rotation through an opening in the tube entry trough so that its pockets may be selectively aligned with the trough. As the tube is transferred in a direction toward the reducing rolls, it moves through the pocket aligned with the trough and its forward end engages the plug in such pocket and moves the plug to engagement with the mandrel bar for disposition between the work rolls. The tube is then rolled over the plug and upon completion of the rolling operation, the tube clears the plug and the latter falls to a chute and is delivered to a lower pocket of the rotatable drum. The drum is then rotated to position another plug in alignment with the entry trough for a subsequent rolling operation.

The invention also relates to improved plugs and in one aspect includes a two part plug, the parts being mounted on connecting rods with resilient means therebetween. In another aspect, the improved plug is formed as a one-piece hollow member to reduce weight, the member being symetrical about a center portion so that either end may be pointed in rolling direction.

3,762,202

ROLLING MILL FOR FLAT-ROLLED PRODUCTS

William Lyon Sherwood, 668 Baycrest Dr., Vancouver, B.C., Canada

Filed Oct. 18, 1971, Ser. No. 189,900
Int. Cl. B21b *31/32*
U.S. Cl. 72—245 9 Claims

The invention is a rolling mill for flat-rolled products designed in a manner to substantially eliminate bending of the rolls under load with associated convexity of the roll gap and resultant tendency towards excess convexity of bar transverse profile. The rolling mill employs the partial cylindrical surface

of the roll barrel itself in contact with a corresponding work roll bearing pad, rather than roll neck end bearings, as the main load bearing mill bearings, and supports this bearing against a transversely elongated hydrostatic cushion which distributes the reaction to the roll force uniformly along the length of the work roll. Pressure equalizing cylinders at the roll ends are also used to compensate for bending effects resulting from differences between length of the hydrostatic cushion and width of the bar being rolled. The mill is intended for application to hot and cold rolling of plate, sheet and strip products made of steel, aluminum, copper and like, either in a single stand or in tandem rolling mill applications.

3,762,203

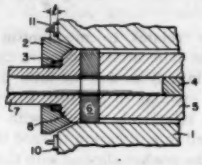
HOT EXTRUSION OF METALS

Jose Ignacio Martinez Garin, Bilbao, Spain, assignor to Cefilac, Paris, France

Filed July 9, 1971, Ser. No. 161,075

Int. Cl. B21c *23/00*

U.S. Cl. 72—255 **2 Claims**



A method and apparatus in the hot extrusion of metal billets into solid or tubelike sections in which after extruding the billet into the desired extrudate and an integral discard and prior to removing the extruding ram, the billet container is withdrawn a short distance, but is kept in contact with a portion of the discard.

3,762,204

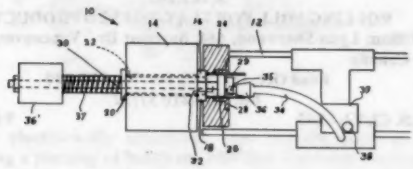
METHOD AND APPARATUS FOR THE PREPARATION OF FLANGED CONDUIT

Jerry Curtis Socier, Essexville, Mich.

Filed Dec. 13, 1971, Ser. No. 207,346

Int. Cl. B21d *41/02*

U.S. Cl. 72—316 **11 Claims**



Flanged conduit is prepared by forming a malleable conduit over a master or form employing a resiliently tensioned pivoted frusto-concial forming roll.

3,762,205

END TRANSFORMER AND ENCLOSURE

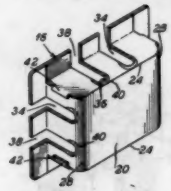
Robert W. Franz, Elk Grove Village, and John J. Zielnicki, Northbrook, both of Ill., assignors to Cam-Fran Tool Co., Inc., Chicago, Ill.

Filed Jan. 3, 1972, Ser. No. 215,058

Int. Cl. B21d *38/00*

U.S. Cl. 72—339 **15 Claims**

An end enclosure for transformers in which a pair of opposed transverse walls are formed along bend lines which form a square corner with the top wall, said sidewalls having elongated openings which extend up to said bend lines to provide greater access space for conductors. The opposite pair of transverse walls may have top round corners so that said walls tend to counter displacement towards each other. Interlock means may be provided between the first and second pair of sidewalls to prevent outward displacement of the round corner sidewalls and inward displacement of the square corner sidewalls. A method for making such improved end enclosures



from planar, deformable sheet material provides removing areas of selected configuration from the four corners of the sheet material, and forming the opposed pair of extending sidewall portions into the sidewalls of the enclosures by moving them along bend lines. A substantially continuous flange portion is formed by moving a bottom portion of each sidewall along bend lines.

3,762,206

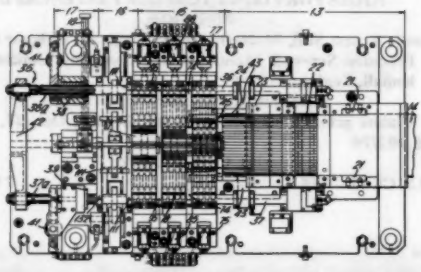
APPARATUS FOR AND METHOD OF MANUFACTURING CORES FOR IGNITION COILS

Eric John Wright, Sutton Coldfield, and Desmond Thomas Robinson, Northfield, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 2, 1971, Ser. No. 204,180

Int. Cl. B21d *13/02*

U.S. Cl. 72—382 **25 Claims**



Apparatus for manufacturing laminated cores for spark ignition system ignition coils including a corrugating station which receives sheet metal blanks. Each sheet metal blank has a plurality of parallel slits, which divide the blank into laminae interconnected at their ends. The corrugating station includes a plurality of tools which operate in sequence on the blank to corrugate the blank along the lines of the slits, and the apparatus is such that the undeformed portion of the blank is free to move relative to the tools and the tools sequentially form the corrugations in the blank.

3,762,207

METHOD OF FABRICATING CURVED SURFACES

Sidney Weiser, Silver Spring, Md., assignor to Weiser/Robodyne Corporation, Silver Springs, Md.

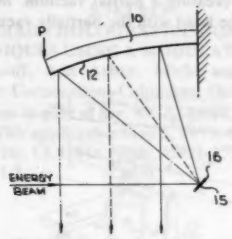
Filed Dec. 3, 1971, Ser. No. 204,472

Int. Cl. B21d *11/08*

U.S. Cl. 72—388 **10 Claims**

Accurate and inexpensive fabrication of mathematically derived curved surfaces is achieved by deflecting a supported

beam, preferably a cantilever beam, with a force applied to the free end of the beam. Deflection of the beam at any point along its length is determined, in part, by the moment of inertia of the beam cross-section at that point; thus by varying the



beam cross-section along the beam length, the deflected beam is made to conform to the desired curve. The resulting accurately attained curved surface has primary utilization as a reflector of light, sound, microwave or other energy beams.

3,762,208

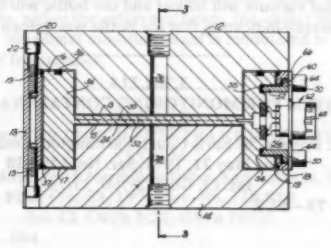
DIFFERENTIAL PRESSURE TRANSDUCER

James W. Bice, Wayne, N.J., and Will Timm, deceased, late of Flintridge, Calif. (by Asta Timm, executrix), assignors to Celesco Industries, Inc., Costa Mesa, Calif.

Filed Nov. 11, 1971, Ser. No. 197,878

Int. Cl. G01l 9/04

U.S. Cl. 73—398 AR **10 Claims**



A housing structure defines opposing sealed fluid pressure chambers separated by a thin flexible metal diaphragm formed integrally with a surrounding retaining ring and a narrow thickened beam portion extending radially across the diaphragm. A small cavity is formed extending into one end of the beam portion. Strain gages, electrically coupled as a differential bridge circuit, are applied to opposite walls of the cavity in the area of maximum bending stress to measure the compresson strain on one wall and the tension on the other resulting from deflection of the diaphragm and its beam portion by pressure differences in the opposing chambers.

3,762,209

CRIMPING APPARATUS

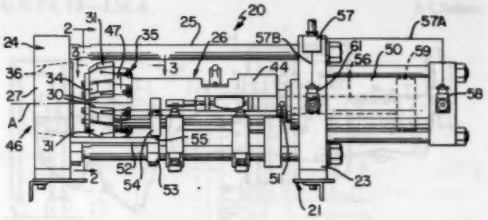
Leon Herndon, Eldora, Iowa, and Charles S. Pearson, Dayton, Ohio, assignors to Dayco Corporation, Dayton, Ohio

Filed May 8, 1972, Ser. No. 251,231

Int. Cl. B21d 41/00

U.S. Cl. 72—402 **15 Claims**

A crimping apparatus is provided comprising a die head having a central longitudinal axis and a plurality of spaced slots therein each having an associated die finger received therewithin with each die finger having a workpiece-engaging surface and an outside cam surface. The apparatus includes a simple device independently supporting each finger within its slot for movement transverse the longitudinal axis and has a die plate which has a cooperating cam surface which is adapted to engage the outside cam surfaces so that a workpiece to be crimped is received adjacent the workpiece-engaging surfaces and upon relatively moving the die head and die plate together the cam surfaces engage the cooperating cam



surface to thereby urge the die fingers radially inwardly causing the workpiece-engaging surfaces to crimp the workpiece. The die head construction is such that it can receive workpieces having bent end portions to enable swaging or crimping such end portions in position.

3,762,210

FORGING DIES FOR THE FORGING OF TURBINE AND COMPRESSOR BLADES OR VANES

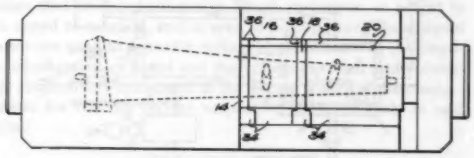
Denis White, Leeds, England, assignor to Doncasters Monk Bridge Limited, Leeds, England

Filed Sept. 28, 1971, Ser. No. 184,522

Claims priority, application Great Britain, Oct. 5, 1970, 47,154/70

Int. Cl. 72 473; B21j 13/02

U.S. Cl. 72—413 **2 Claims**



A pair of forging dies for forging a turbine or compressor blade, the dies each having an impression of the required blade form and at least a part of each impression being in an insert or a plurality of inserts in each die. Spacer members are provided for locating each insert in each die in relation to the remaining inserts or in relation to a part of the impression located directly in the body of the die.

ERRATUM

For Class 73—24 see:
Patent No. 3,762,197

3,762,211

METHOD AND APPARATUS FOR CONTINUOUSLY MEASURING THE POROSITY OF A MOVING WET POROUS CONTINUOUS SHEET

Ole Poulsen, 11 Park Ave., Apt. 5D, Mt Vernon, N.Y.

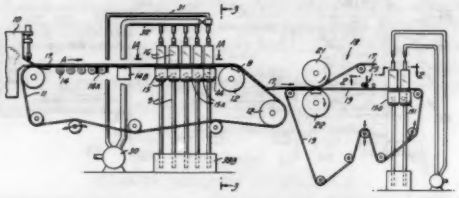
Filed Jan. 28, 1972, Ser. No. 221,688

Int. Cl. G01m 3/02; G01b 13/00

U.S. Cl. 73—38 **18 Claims**

Method and apparatus for continuously measuring the porosity of a moving wet porous continuous sheet by removing water from the sheet by a first uniform application of a pressure differential across the sheet through a suction slice having a uniform opening extending in a direction generally perpendicular to the direction of sheet movement. Subsequently, the moving sheet is subjected to a second uniform application of a

pressure differential across the sheet in a direction generally perpendicular to the direction of the sheet movement. The flow of water and air created by the second pressure differential is passed into a measuring box through a measuring slice having a uniform opening extending across the sheet in a



direction generally perpendicular to the direction of movement of the sheet. The air is expanded as it passes through a measuring slice and the velocity of the air and water is lowered and the air is separated from the water droplets. Changes in the flow of the air passed through the measuring slice is measured.

3,762,212

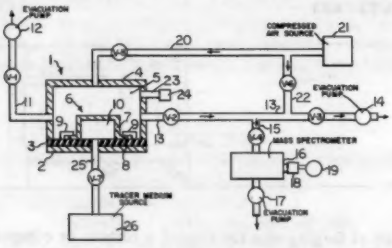
LEAK TESTING APPARATUS AND METHODS

John D. Morley, and Paul Forgash, both of Bay City, Mich., assignors to Advanced Technologies, Inc., Bay City, Mich.

Filed July 15, 1971, Ser. No. 162,854

Int. Cl. G01m *3/20*

U.S. Cl. 73—40.7 **7 Claims**



Leak testing a device forming a chamber wherein the device is placed in a test chamber following which a differential pressure is established between the chamber of the device and the test chamber. A tracer gas is introduced to the higher pressure chamber and communication is established between the lower pressure chamber and detecting apparatus such as a mass spectrometer which is sensitive to the tracer medium so as to detect any leakage of the tracer medium from the higher pressure chamber to the lower pressure chamber. At the inlet to the detecting apparatus is established a pressure chamber as to provide laminar flow from the lower pressure chamber to the inlet to the detecting apparatus.

3,762,213

LEAK DETECTOR

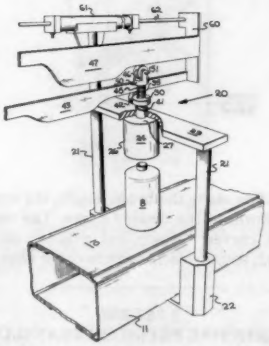
Casimir W. Nowicki, Toledo, Ohio, assignor to Owens- Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 840,181, July 9, 1969, abandoned. This application May 3, 1971, Ser. No. 139,896

Int. Cl. G01m *3/34*

U.S. Cl. 73—45.3 **4 Claims**

A method and apparatus is provided for detecting leaks in plastic bottles. The leak detector is sealingly engaged to the mouth of the bottle to be tested. Thereafter, a vacuum is drawn in the bottle by moving a rod having a flexible diaphragm connected thereto away from the bottle mouth. Such movement of the diaphragm while the detector is engaged to the bottle mouth results in an increased volume within the sealed area with no change in the amount of air contained within such sealed area. Accordingly, the pressure within such sealed area will be reduced from atmospheric pressure thereby creating a partial vacuum. Means are provided for lifting the head with the partially vacuumized bottle



carried thereon. If the bottle is satisfactory from a leakage standpoint, it will be retained thereon by virtue of the vacuum for a predetermined period of time, say on the order of three seconds. On the other hand, if the bottle contains a leak, sufficiently great to render the bottle commercially unsatisfactory, the partial vacuum will be lost and the bottle will fall from the head, thereby indicating that the bottle was defective.

3,762,214

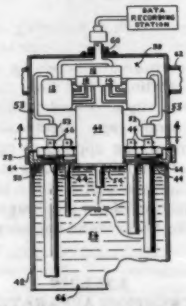
SYSTEM FOR MONITORING CONTAMINANTS IN LIQUIDS

Frank J. Bogusz, 3E Earls Court, Farmington, Conn.

Filed May 21, 1971, Ser. No. 145,820

Int. Cl. G01n *27/00, 33/18*

U.S. Cl. 73—61 R **6 Claims**



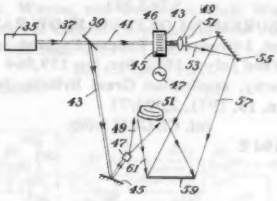
There is provided a water pollution monitoring system which may be coupled with data handling and processing equipment while the water pollution monitoring system is functioning. Varying levels of pollutents are detented by means of a variety of sensors and an electrical signal corresponding to the pollutant level is processed for recording and/or transmission. Means are provided for automatic periodic cleaning of the sensors so that a high level of accuracy can be maintained for an extended period of time. Additional means are provided for data reduction within the system to reduce massive volumes of detected information to that

which is specifically of interest to the equipment operator. Still further means are provided for controlled suspension of the system in aqueous media to maximize system operation.

3,762,215
TIME AVERAGE HOLOGRAPHIC CONSTRUCTION TECHNIQUES USING A MODULATED BEAM

Carl C. Aleksoff, Ann Arbor, Mich. assignor to Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 831,090, June 6, 1969, abandoned. This application May 5, 1971, Ser. No. 140,504
Int. Cl. G01n *25/00*; G02b *27/00*
U.S. Cl. 73—71.3 16 Claims

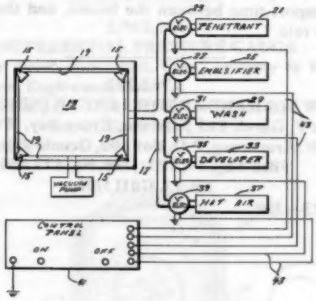


A technique for examining vibratory or other changing characteristics of an object by constructing a time averaged hoiogram of the changing object. In one embodiment, the hologram constructing reference beam is of a single frequency distinct from that of the object illumination beam. In other embodiments, either the reference beam, the object illuminating beam or the object modified beam is modulated to include a plurality of frequencies.

3,762,216
AUTOMATED LIQUID PENETRANT INSPECTION SYSTEM

Emilio Mendoza, 5018 Northfield Drive, San Antonio, Tex.

Filed Feb. 23, 1971, Ser. No. 118,010
Int. Cl. G01b *5/28*; G01n *19/08*
U.S. Cl. 73—104 1 Claim

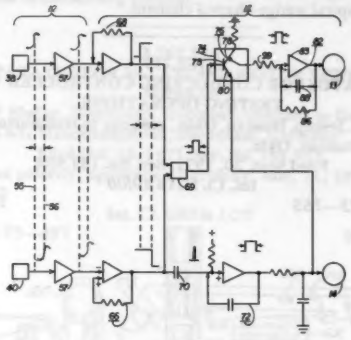


A system of in situ inspection of critical jet engine parts for defects by applying a high penetrating fluorescent oil and inspecting under a light of the proper wavelength. The system which is unitized and portable includes an evacuatable chamber suitable for containing the parts to be inspected. A series of tanks containing the pressurized solutions of penetrant emulsifier wash and developer as well as a hot-air tank are operatively connected to the chamber so that the required solution can be applied under proper conditions for the necessary time period to thereby disclose any defect in the critical engine part.

3,762,217
TRANSMISSION DYNAMOMETER

Glenn E. Hagen, 13342 Dwyer Blvd., New Orleans, La.

Filed Mar. 29, 1971, Ser. No. 129,081
Int. Cl. G01l *3/12*
U.S. Cl. 73—136 A 6 Claims

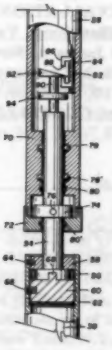


The optical sensing of twist or torque and speed in a loaded rotating shaft through the physical displacement of a pair of index marks fixed thereon, said marks being longitudinally spaced apart and in line when the shaft is not loaded. Photo cells convert the optical sensing to pairs of electrical signal pulses, the time intervals between the pulses being proportional to the torque and the number of pairs per unit of time being the speed of rotation of the shaft. The signal pulses are combined in a computer to obtain square wave-form signal pulses that are proportional in length to torque, in height to the speed of rotation, and in area to horsepower. These signal pulses are used to generate voltages proportional to the physical characteristics noted and the voltages are fed into voltmeters respectively calibrated in the proper units for the characteristic for reading off the respective values directly in said units.

3,762,218
STOCK POINT INDICATING DEVICE WITH LINEAR SENSING MEANS

Mike Davis, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 19, 1971, Ser. No. 173,166
Int. Cl. E21b *47/00*
U.S. Cl. 73—151 7 Claims



The body of the device, consisting of two relatively movable sections, is lowered into a well at the end of a cable. A bow spring anchor assembly is mounted upon each of the sections

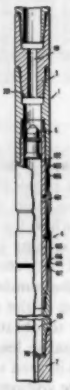
in a manner that allows the sections to rotate freely and move axially relative to the bow springs until a measurement is to be made. The sections are locked to the anchor assemblies upon command from the surface and a stuck point measurement is made. A sensing means in the body of the device detects relative movement of the two sections and produces a linear signal representing said movement. The sensing means includes a movable spiral wedge-shaped element.

3,762,219

APPARATUS FOR CONDUCTING CONTROLLED WELL TESTING OPERATIONS

Robert L. Jessup, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Sept. 20, 1971, Ser. No. 181,984
Int. Cl. E21b *49/00*
U.S. Cl. 73—155 **7 Claims**



A well testing apparatus, and method for effecting well testing, wherein a translatable barrier means is operable to both permit and indicate a flow of formation fluid through a testing string portion while continuously preventing a transmittal of fluid from a formation being tested to a well head and/or a flow of such fluid past the barrier means.

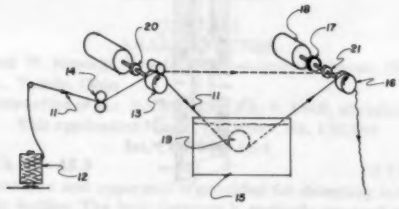
In practicing this method and utilizing this apparatus, an abruptly operable indicating means is operable in response to a generation of pressure within a testing string to provide a well head indication that such a pressure generation has been achieved.

3,762,220

CONTINUOUS EVALUATION OF YARN CRIMP

James A. Gusack, Williamsburg, Va.; Bernard B. Stephens, Anderson, S.C., and James A. Stevens, Williamsburg, Va., assignors to Don Badische Company, Williamsburg, Va.

Filed Jan. 10, 1972, Ser. No. 216,835
Int. Cl. G01d *21/00*
U.S. Cl. 73—160 **4 Claims**



Yarn is caused to travel at a velocity w_1 under a constant tension sufficient to straighten but insufficient to stretch the yarn. Downstream of the point of application of this tension, a second constant tension is applied to the yarn, the second tension being small enough to allow any crimp in the yarn to be re-formed. The velocity w_2 of the yarn traveling past the point of application of the second constant tension is continuously measured, and the crimp along the length of the yarn is continuously evaluated by means of the relationship

$$\text{Crimp } (\%) = [(w_1 - w_2)100./w_1]$$

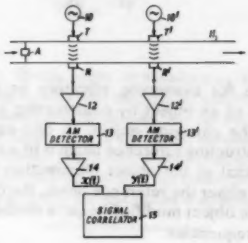
If desired, measurement of latent crimp may be obtained according to this invention by developing the crimp (e.g., by the application of steam or boiling water to the yarn) between the two points where tension is applied to the yarn.

3,762,221

MEASUREMENT OF FLUID FLOW RATES

John Coulthard, 1 Greencroft, Redcar, England

Filed July 6, 1971, Ser. No. 159,864
Claims priority, application Great Britain, July 6, 1970, 32,563/70; Jan. 19, 1971, 2,593/71
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 E **34 Claims**



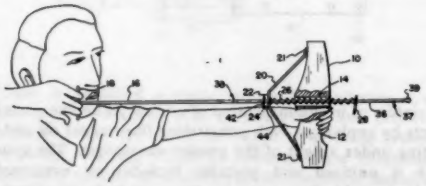
Apparatus and a method for measuring the flow rate of a fluid in which a beam of ultrasonic, electromagnetic, optical or other radiant energy is transmitted across the flow at each of two positions spaced apart in the direction of flow, the noise amplitude, frequency or phase modulation on each beam due to disturbances in the flow is detected, and the two resultant signals are cross-correlated to determine the time delay therebetween producing maximum correlation, i.e. the mean fluid transport time between the beams, and thus the mean fluid flow rate.

3,762,222

BOW PULL AND ARROW LENGTH INDICATOR

Lawrence F. Garot, 115 Jefferson, Green Bay, Wis., and Laurence W. Armstrong, P.O. Box 100, Oconto Falls, Wis.

Filed Aug. 17, 1971, Ser. No. 172,450
Int. Cl. G01l *5/02*
U.S. Cl. 73—380 **14 Claims**



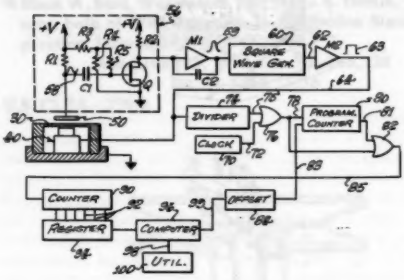
A bow pull and arrow length indicator to permit selecting the proper bow "weight," or strength, and the proper arrow length for a given archer. The indicator is in the form of a bow simulated handle provided with a simulated arrow rod slidably displaceable relatively to the handle. A coil spring is disposed

around the arrow rod, and the "weight" of the bow is simulated by means of an adjustable abutment on the end of a coil spring. The archer pulls the arrow rod to his anchor point to a full draw, thus compressing the spring between the adjustable abutment means and a fixed abutment dependent from the handle. Various bow weights are simulated by varying the force exerted by the spring against the archer's full draw, as a result of setting the coil spring adjustable abutment means longitudinally on the arrow rod along a scale calibrated in bow weights. After selecting a comfortable bow weight, the correct arrow length is determined at full draw by reading the proper arrow length on a scale engraved on the arrow rod.

3,762,223
DIGITAL PRESSURE TRANSDUCER

Robert Feuer, Wayne, and Donald A. Ball, Warren, both of N.J., assignors to Conrac Corporation, New York, N.Y.

Filed Sept. 10, 1971, Ser. No. 179,473
Int. Cl. G01l 9/12
U.S. Cl. 73—398 C **4 Claims**

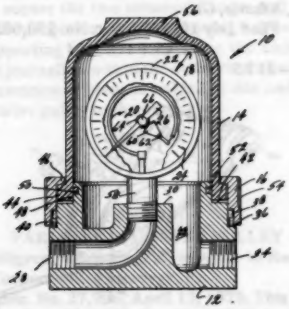


Fluid pressure is sensed by applying it differentially to a diaphragm, causing the diaphragm to vibrate at a natural frequency, and sensing the stressing of the diaphragm in terms of the resulting change in the natural frequency. The frequency of vibration is measured essentially by counting cycles and offsetting the count to introduce a reference pressure. Improved accuracy is obtained by forming the diaphragm of preferred magnetic materials having low temperature dependence of elasticity.

3,762,224
DIFFERENTIAL PRESSURE GAUGE

John Vander Horst, Lakewood, Colo., assignor to Wilkerson Corporation, Englewood, Colo.

Filed June 21, 1971, Ser. No. 155,110
Int. Cl. G01l 7/04, 19/14
U.S. Cl. 73—420 **5 Claims**

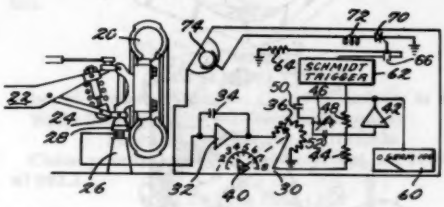


This invention relates to a differential pressure gauge in which the base has an inlet passage connectable to a source of fluid pressure and an outlet passage left open to the atmosphere. A transparent bowl is removably attached to the base by means of a lock ring. The sensing element of the gauge is connected to the inlet so as to respond to the fluid pressure therein while, at the same time, responding to the ambient conditions inside the bowl. The resulting differential pressure reading is transferred to a dial by an indicator responsive to the action of the sensing element.

3,762,225
APPARATUS FOR BALANCING MOTOR VEHICLE WHEELS

Richard Muller, Worfelden, Germany, assignor to Gebr. Hofmann KG Maschinenfabrik, Darmstadt, Germany

Filed Oct. 18, 1971, Ser. No. 189,853
Claims priority, application Germany, Nov. 11, 1970, P 20 55 493.2
Int. Cl. G01m 1/28
U.S. Cl. 73—457 **10 Claims**



An apparatus for balancing one or a pair of motor vehicle wheels while on the axle whereby the wheel is supported on a stand having a transducer mounted therein for producing a voltage signal indicating the magnitude and angular imbalance location of the wheel. The voltage signal is applied to a quadratic circuit having a frequency characteristic which falls quadratically with the speed of wheel rotation and a 90° phase lead of the output relative to the input voltage so that the output of the quadratic circuit is substantially independent of the speed of wheel rotation. The output of the quadratic circuit is applied to a measuring device which indicates the magnitude of the imbalance and to a circuit which causes stroboscopic flashes to be produced while the imbalance is at dead center bottom.

ERRATUM

For Class 72—398 see:
Patent No. 3,762,208

ERRATUM

For Class 73—189 see:
Patent No. 3,762,876

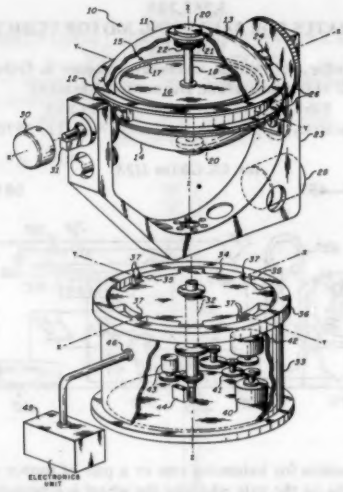
3,762,226
CONTROL MOMENT GYROSCOPE WITH INTEGRAL TORQUE CONTROL

Lawrence P. Davis; John E. Harrison, both of Phoenix, and Everett R. Tribken, Scottsdale, all of Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 7, 1971, Ser. No. 131,964
Int. Cl. G01c 19/30
U.S. Cl. 74—5.4 **16 Claims**

A vehicle control mounted moment gyroscopic apparatus which employs a closed loop torque feedback system and in-

cludes a gyroscopic rotor disposed within a shell-like housing. The rim of the shell-like housing functions as the inner gimbal assembly and is coupled to a half-ring cantilevered middle gimbal assembly. The middle gimbal assembly is connected through a spindle to a flexure plate within a base gimbal assembly. Torque sensors are affixed to the flexure plate and provide torque feedback signals in accordance with the magnitude of the actual torques applied between the vehicle and



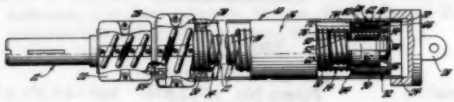
the gyroscopic apparatus. The torque feedback signals are combined in a summing device with torque command signals to produce differential torque signals proportional to the difference between the torque command signals and the applied torque signals. Control law circuits translate the differential torque signals into controlled torque signals that are applied to torquers which drive the inner and middle gimbal assemblies in a direction that provides a substantial reduction in the magnitude of the differential torque signals.

3,762,227

DAMPED AND CUSHIONED STOP

Arthur F. Bohnhoff, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 12, 1971, Ser. No. 188,238
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **6 Claims**



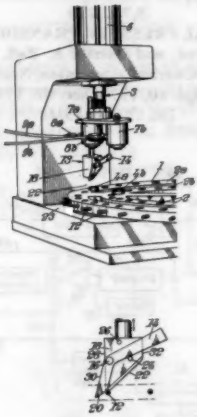
A damped stop for cushioningly arresting relative axial motion between screw and nut portions of a screw and nut type actuator, the stop including an axially collapsible annular housing disposed on the screw portion and adapted for engagement on the nut portion to effect axial collapse and a plurality of elastically deformable annular combination restoring and damping members disposed in the housing. When the nut portion engages the housing and initiates axial collapse thereof the combination members are compressed and radially expanded into engagement on the relatively moving sides of the housing. The compression functions to cushioningly arrest the relative axial motion between the screw and nut portions while the radial expansion generates friction which dissipates kinetic energy and damps the collapse and subsequent expansion of the housing to eliminate transient oscillations.

3,762,228

ADVANCING MECHANISM

Jean-Claude Crepin, Paris, France, assignor to Choay S.A., Paris, France

Filed Oct. 5, 1971, Ser. No. 186,673
Int. Cl. F16h *27/02*
U.S. Cl. 74—128 **9 Claims**



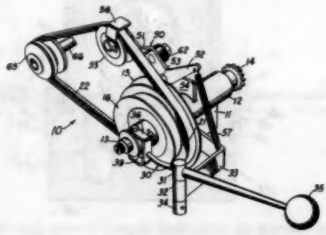
The mechanism advances a plate bearing a plurality of objects at regularly spaced positions to bring each object accurately to a predetermined work station. The mechanism is operated by the alternate up and down movements of a distributor or tool. The plate bearing the objects has pegs projecting at positions corresponding respectively to those of the objects. The tool moves alternately from a upper or rest position to a lower or working position. A lever is pivoted on the tool. In the equilibrium position of the lever a first cam surface thereon contacts and pushes forward one peg at a time. A second cam surface on the tool extends the first cam surface and completes the pushing of the plate by one step. The following peg pivots the lever away from its equilibrium position when the tool is returning to its rest position.

3,762,229

VARIABLE POWER RATIO DEVICE

Ted W. Johnson, Griffin, Ga., assignor to Hamilton Brothers Mfg. Co., Atlanta, Ga.

Filed July 10, 1972, Ser. No. 270,085
Int. Cl. F16h *9/04*
U.S. Cl. 74—217 S **10 Claims**



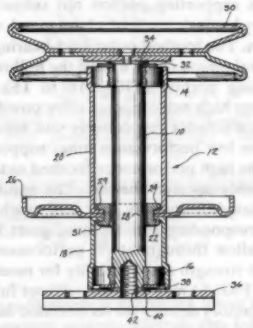
A variable ratio drive device including a rotatably supported drive shaft having a pair of axially shiftable pulleys

rotatably fixed thereto, with the pulleys being of different diameters and coaxially fixed to each other, and wherein each pulley includes a grooved rim so as to form a sheave. The common edge of the juxtaposed pulley sheave elements include a cutout or flat portion detailed to cause a belt to be shifted from one pulley to the other pulley in response to an axial shifting and rotary movement of the pair of pulleys. The variable ratio drive device includes lever means for effecting axial shifting movement of the pair of pulleys. An idler pulley is operatively associated with the pair of pulleys for maintaining tension on a drive belt operatively supported on a selected one of the pair of pulleys. The variable ratio drive device is operable to either receive driving power through the drive shaft and for delivering variable output drive to a driven shaft, or is operable for receiving drive to the pair of pulleys and for delivering variable output drive to the supporting drive shaft.

3,762,230
PULLEY AND SHAFT ASSEMBLY FOR ROTARY LAWN MOWER

William W. Steil, Wauwatosa, and Bryan E. Domin, Hales Corners, both of Wis., assignors to Production Stamping Corporation, Milwaukee, Wis.

Filed June 23, 1972, Ser. No. 265,720
Int. Cl. F16h *55/36*
U.S. Cl. 74—230.3 **7 Claims**



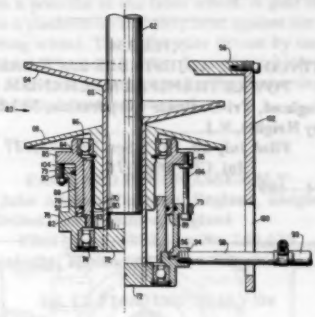
A cylindrical sleeve for a lawn mower drive shaft is formed from two hollow tubes each of which has an inturned annular flange on one end thereof. An annular collar for supporting the sleeve is placed between theinturned flanged ends of the two tubes and a hollow rivet is passed through the inturned flanges and the inner periphery of the annular collar. The rivet is headed to secure the two inturned flanges and the supporting collar tightly together, thereby forming a cylindrical sleeve having a supporting collar intermediate the ends thereof. A drive shaft is journalled within the cylindrical sleeve and a saddle for the lawnmower blade is welded to one end of the drive shaft, and a drive pulley to the other end.

3,762,231
VARIABLE DIAMETER PULLEY

David D. Pettigrew, Gibsonia, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 27,786, April 13, 1970. This application Feb. 22, 1972, Ser. No. 228,064
Int. Cl. F16h *9/00*
U.S. Cl. 74—230.17 F **2 Claims**

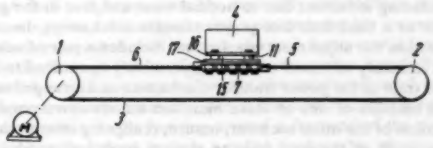
A variable diameter pulley hydraulically shiftable to a selected effective diameter, the pulley including stop means for determining its maximum and minimum effective diameters.



3,762,232
LOW SLIP BELT DRIVE

Friedrich Muller, Halstenbek, Germany, assignor to Aristo-Werke Dennert & Pape KG, Hamburg, Germany

Filed Sept. 20, 1971, Ser. No. 181,936
Claims priority, application Germany, Sept. 24, 1970, P 20 47 092.2
Int. Cl. F16g *1/00, 13/02*
U.S. Cl. 74—231 M **11 Claims**

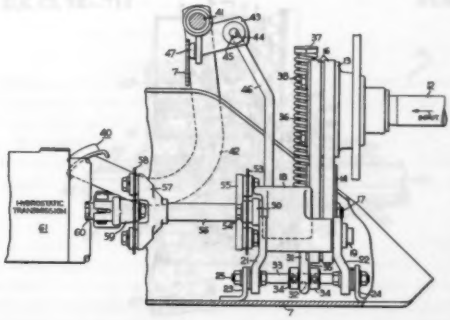


A low slip belt drive in which a thin, highly preloaded steel belt is wound around a drive wheel and a reversing wheel, and in which an elastic tensioning element forms a belt lock and also dampens vibrations originating in the steel belt and drive.

3,762,233
CLUTCH

Marcus J. Colloton, Cedarburg, Wis., assignor to Simplicity Manufacturing Company, Inc., Port Washington, Wis.

Filed Mar. 3, 1972, Ser. No. 231,677
Int. Cl. F16h *7/10*
U.S. Cl. 74—242.14 R **4 Claims**



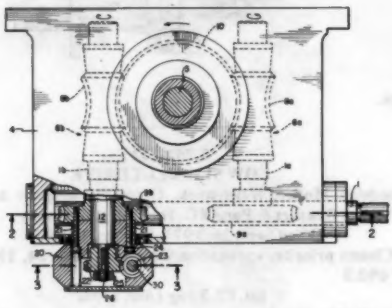
This disclosure comprehends an economical clutch for a main transmission drive usable in a lawn and garden tractor

and this is accomplished by eliminating an idler pulley to control belt tension and providing a pivoted driven pulley which can be pivoted to interrupt the drive therefrom by misaligning its drive shaft through two flexible fiber glass disks.

3,762,234
CONTINUOUSLY ADJUSTABLE BACK LASH FREE POWER TRANSFER MECHANISM

Nils O. Hoglund, Tri-Ordinate Corporation, 343 Snyder Ave., Berkeley Heights, N.J.

Filed July 20, 1972, Ser. No. 273,627
Int. Cl. F16h *1/16, 55/18*
U.S. Cl. 74—409 **10 Claims**

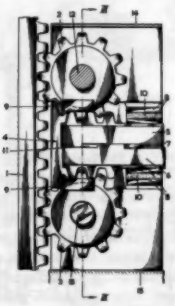


An improved adjustment mechanism for taking up back lash producing looseness due to normal wear and tear in the gear train of a back lash free power transfer mechanism. In construction the adjustment mechanism includes a pair of coacting rotatably mounted members operatively connected to the gear train of the power transfer mechanism and arranged such that rotation of one of these members causes corresponding rotation of the other member, in turn, realigning intermeshing gear teeth of the gear train to remove back lash producing gaps or play therebetween.

3,762,235
LOCKING DEVICE

Simon Splinter, Schiedam, Netherlands, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Filed Apr. 5, 1971, Ser. No. 131,346
Claims priority, application Netherlands, Apr. 3, 1970, 7004827
Int. Cl. F16h *1/04*
U.S. Cl. 74—422 **5 Claims**

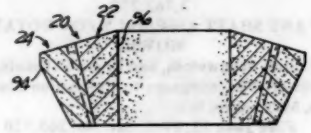


The pinion that drives a loaded vertical rack is locked by means of a second pinion also in mesh with the rack and a locking device disposed between the pinions and having relatively slidable parts each of which carries rack teeth in mesh with one of the pinions. By limiting the sliding of the two parts relative to each other, the locking member bears part of the load to which the pinions are subjected so that the pinions in locked position are partly unloaded and the entire structure can withstand a higher load.

3,762,236
COMPOSITE HEAVY-DUTY GEAR

William M. Dunn, 28639 Oak Point Dr., Farmington, Mich., and Myron C. Sarnes, 20248 Woodhill, Northville, Mich.

Division of Ser. No. 95,299, Dec. 4, 1970, Pat. No. 3,665,585.
This application Mar. 20, 1972, Ser. No. 235,929
Int. Cl. F16h *55/04, 1/14*
U.S. Cl. 74—434 **2 Claims**

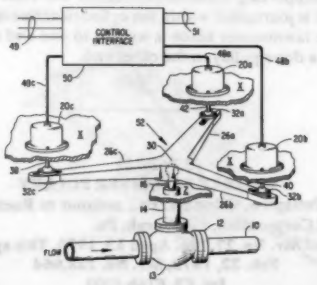


A composite heavy-duty gear, such as a bevel pinion (FIGS. 1 to 6 inclusive), has its working or load-bearing portion or portions composed of sintered powdered high-performance alloy while its supporting portion not subjected to concentrated or heavy loads, is made of a base metal, such as sintered powdered iron. The toothed outer load-bearing portion of the composite bevel pinion (FIG. 6) and the hollow frusto-conical inner supporting portion (FIGS. 10 to 15) are separately briquetted from high performance alloy powder and low performance metal powder respectively and separately sintered after which the low performance inner supporting portion is pressed into the high performance toothed outer portion so as to be inseparably secured thereto. The resulting composite sintered powdered heavy-duty gear is of much lower material cost than corresponding conventional gears formed of high performance allow throughout yet perform satisfactorily and have sufficient strength and durability for most purposes. The bevel pinion (FIG. 6) may be used without further densification if of satisfactory density for its intended uses, or it may be further densified by being subjected to an additional hot forging operation.

3,762,237
DIGITALLY CONTROLLED LINEAR ACTUATOR

Phillip J. Stevko, Euclid, Ohio, assignor to Bailey Meter Company, Wickliffe, Ohio

Filed Jan. 3, 1972, Ser. No. 214,620
Int. Cl. G05g *11/00*
U.S. Cl. 74—479 **9 Claims**



A device having a triangular shaped main body mounting an output member and with locking position acting inputs

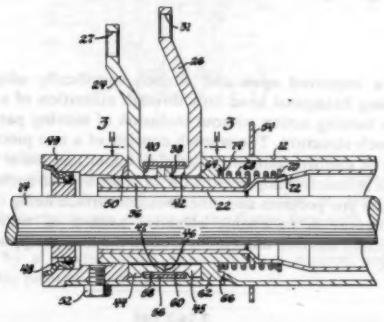
mounted proximate to each corner is made to function as a D/A converter. Two discreet positions for each input contributes to the extension of the output member and allows it to assume eight distinct positions, each depending on the combination of input positions. Another arrangement with nine position inputs mounted proximate to the corners of three triangles allows the output member to assume 512 distinct positions depending upon the combination of input positions. The inputs are arranged to provide unequal additive contributions to the output member's motion. Equal stroke amplitude inputs require the distances at which the inputs appear from the output member to be unequal to provide unequal contributions to the output member. Unequal stroke amplitudes require the inputs to appear at equal distances with respect to the output member. The load on the output member is distributed among the actuators in the ratio of the distance each input appears from the output member to the sum of the three input distances to the output member.

3,762,238

TRANSMISSION CONTROL

Henry I. Piziks, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 14, 1972, Ser. No. 289,001
Int. Cl. G05g 9/12
U.S. Cl. 74—485 **5 Claims**



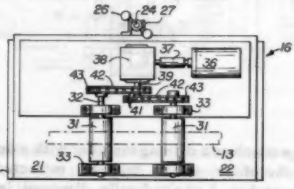
The drawings illustrate a simplified lower steering column transmission control system wherein the 1–R and 2–3 shift levers have mounting rings which bear against one another around the control tube, between bearings associated with the jacket, to thereby eliminate the need for any adjustment means, with an enclosed actuating pin operatively connected to the control tube cooperating with slots formed in the mounting rings to provide selective rotary movement of the 1–R and 2–3 shift levers.

3,762,239

WHEEL TURNING DEVICE

Robert J. Rouis, 3353 Shasta Drive, San Mateo, Calif.

Continuation-in-part of Ser. No. 6,337, Jan. 28, 1970, Pat. No. 3,648,539. This application Mar. 2, 1972, Ser. No. 231,158
Int. Cl. B62d 1/22
U.S. Cl. 74—494 **3 Claims**



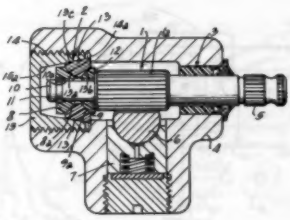
In wheel aligning and other vehicle repair jobs it is frequently necessary to turn the wheels of the vehicle. The wheels are most easily turned by use of the steering wheel, but such turning requires either that the mechanic move from the front of the vehicle to a position to reach the steering wheel or use an assistant. This device is electrically operated and is controlled from a position at the front wheel. A pair of rollers is mounted on a platform so that they bear against the underside of the steering wheel. The rollers are driven by one or more reversible motors powered either from the vehicle battery or utility lines. The motors are controlled by a reversing switch at the front wheel or by remote control.

3,762,240

RACK AND PINION ASSEMBLY

Frederick John Adams, Campton, England, assignor to Cam Gears Limited, Hertfordshire, England

Filed May 2, 1972, Ser. No. 249,629
Claims priority, application Great Britain, May 11, 1971, 14,143/71
Int. Cl. F16c 25/00; F16h 1/04
U.S. Cl. 74—498 **16 Claims**



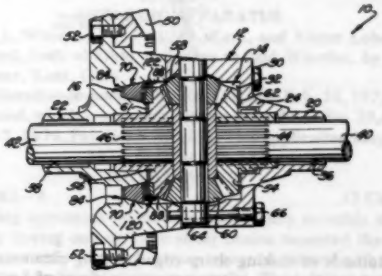
A rack and pinion assembly, especially suitable for a vehicle steering gear, of the type having a pinion rotatably mounted in a housing meshed with the rack of a rack bar movable longitudinally through the housing wherein the pinion is radially adjusted, and in some embodiments also axially adjusted, by inexpensive plastics material, radial and thrust bearing means at one location in the housing around a free end of the pinion. The bearing means include a radial displaceable plastics ring in bearing relation with a free end portion of the pinion adjacent the pinion teeth either directly or through collars on the pinion portion. The plastics ring may be in one piece and split or may be in several segments and is sufficiently resilient to contract and expand under the influence of applied forces from an adjustable cap in the housing or means on the free end of the pinion.

3,762,241

DRIVE MECHANISM

Daniel W. Roper, Rochester, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 12, 1972, Ser. No. 217,326
Int. Cl. F16h 1/44; F16d 43/286, 43/18
U.S. Cl. 74—711 **3 Claims**



An improved drive mechanism includes a regenerative self energizing clutch assembly which is operated by an actuator

from a fully disengaged condition to an intermediate condition when a predetermined speed of relative rotation is present between the driving and driven members. When the clutch assembly is in the intermediate condition it generates self energizing forces which automatically complete the actuation of the clutch assembly to a fully engaged condition. In the fully engaged condition, the clutch assembly retards the relative rotation between the driving and driven members.

3,762,242

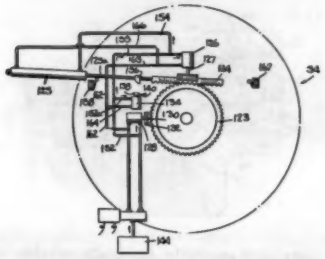
HYDRAULIC INDEXING MECHANISM

Edwin W. Swezey, Hackensack, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Division of Ser. No. 22,186, May 24, 1970, Pat. No. 3,596,322, which is a division of Ser. No. 738,972, June 21, 1968, Pat. No. 3,534,524. This application Apr. 13, 1971, Ser. No. 133,550

Int. Cl. B23b *29/32*

U.S. Cl. 74—822 3 Claims



An indexing mechanism operated by a series of hydraulic cylinders for rotating a shaft and disc to desired positions through predetermined increments.

3,762,243

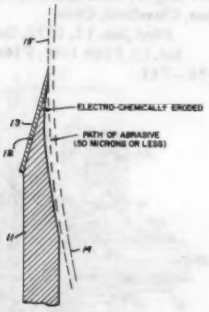
METHODS OF MAKING SHARP-EDGE CUTTING ELEMENTS

Richard A. Borrkfield, 90 Spring Ln., Canton, Mass.

Continuation-in-part of Ser. No. 883,841, Dec. 10, 1969, and a continuation-in-part of Ser. No. 651,486, July 6, 1967, abandoned. This application Mar. 13, 1972, Ser. No. 233,967

Int. Cl. B21k *11/00;* B23p *1/00*

U.S. Cl. 76—104 R 12 Claims



Methods of making sharp-edged cutting elements are disclosed in which one of two opposite surfaces of a work piece has a thin layer added thereto. The work piece is of a metal that is capable of having a cutting edge formed thereon and is subject to electrolytic attack. The added layer is less than 0.010 of an inch in thickness and is of a material capable of being fine ground. Work piece material is removed electrolytically from the other of said work piece surfaces in an area exposing an edge of the added layer which is simultaneously fine ground with an abrasive in the order of and preferably less than 50 microns in size. The material of the added layer is so inert to the electrolyte that it is substantially unaffected thereby while being fine ground.

3,762,244

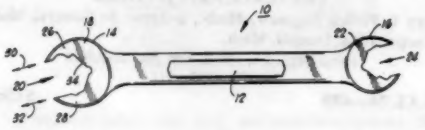
SPEED WRENCHES

James P. Evans, Oklahoma City, Okla., assignor to Specialty Tools, Inc., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 36,778, May 13, 1970. This application June 28, 1971, Ser. No. 157,113

Int. Cl. B25b *13/02*

U.S. Cl. 81—119 1 Claim



An improved open end wrench specifically adapted for turning hexagonal head nuts through utilization of a ratchet-type turning action without inclusion of moving parts in the wrench structure. The wrench consists of a one piece formation of uniform substance defining upper and lower jaw portions in coactive alignment with an inner wrench surface, each of said jaw portions and inner wrench surface being of unique configuration to enable effective seizure of nuts in one direction but free movement around the nuts in opposite rotation.

3,762,245

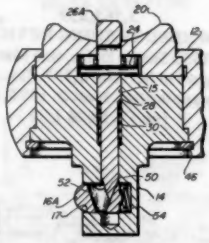
QUICK RELEASE AND SPEEDER FOR SOCKET WRENCH

William H. Smyers, and Ronald D. Russo, both of Wethersfield, Conn., assignors to Litton Industries Products, Inc., New Britain, Conn.

Filed Apr. 8, 1971, Ser. No. 132,289

Int. Cl. B25b *13/06, 13/46*

U.S. Cl. 81—177 G 10 Claims



A socket wrench as a driving member with a detent member projecting therefrom which may be retracted to quickly release the socket. Longitudinally disposed in the driving member for sliding movement is an elongated pin having one face which cooperates with an elongated portion of the detent

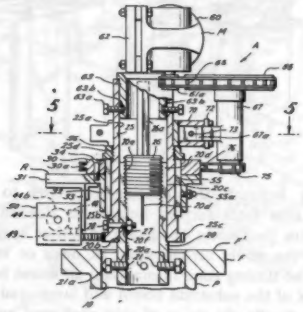
to limit projection of the detent from the drive member In some embodiments the detent is positively forced into the retracted position by a portion of the elongated pin. In another embodiment an eccentrically mounted pin rotates to position the detent between projecting and withdrawing positions. A generally planar speeder attachment releasably engages the driving member to facilitate rapid turning of the socket when only a low torque is required.

3,762,246

FLANGE FACING MACHINE

Anthony F. Becker, Houston, Tex., assignor to DND Corporation, Chicago, Ill.

Filed July 2, 1971, Ser. No. 159,126
Int. Cl. B23b *3/24*
U.S. Cl. 82—4 C **8 Claims**



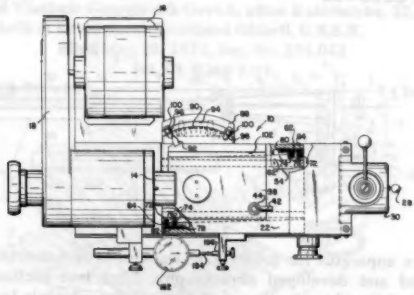
A portable compact machine for resurfacing the faces of flanges on pipes and/or valves, wherein a base is releasably mounted in the bore of the pipe or valve in alignment therewith for accurate cutting of the flange face with a lathe tool, and wherein the tool is automatically fed radially as it is rotated by a power means mounted on a support column removably positioned on the base.

3,762,247

TOOL ADJUSTMENT MECHANISMS FOR A LATHE

Charles D. Sherwood, Elmira, and James R. Cordier, Erin, both of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed July 12, 1971, Ser. No. 161,666
Int. Cl. B23b *5/40*
U.S. Cl. 82—12 **15 Claims**



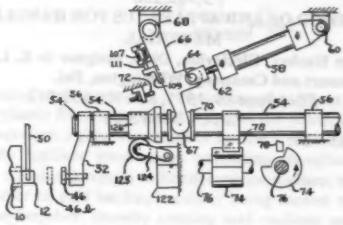
A lathe including a base member having a spindle positioned near one end thereof, a carriage member mounted for reciprocation longitudinally on the base member toward and away from the spindle, tool support means mounted on the carriage member, the lathe including lateral and vertical precision adjustment means for positioning a tool on the centerline of the spindle, the lateral position adjustment means including means for precision adjustment of the lateral position of the carriage member on the base member and the vertical position adjustment means including means associated with the tool support means for precision vertically adjusting a tool thereon.

3,762,248

POWERED STOP FOR BAR CUTTING MACHINES

Charles L. Preston, Cincinnati, Ohio, assignor to American Standard, Inc., New York, N.Y.

Filed Oct. 7, 1971, Ser. No. 187,366
Int. Cl. B23b *3/36*
U.S. Cl. 82—34 A **4 Claims**



In a cutting machine wherein bar stock is fed through a spindle (chuck): the improvement comprising a bar-deflecting element which automatically ejects from the spindle any bar remnant too short to be gripped by the chuck. The bar-deflecting element forms part of a sensor network that artificially limits the stroke of a novel push-back stop means, whereby a new oncoming bar projects slightly further into the machine than would otherwise be the case; this non-normal positioning of the new bar enables the leading end of the bar to be faced off during the ensuing cutting cycle, thereby eliminating the possibility of one scrap part and one non-useful cycle. By facing off the new bar during the cutting cycle I eliminate possible tool breakage due to drills walking on the rough bar end. Preferable the novel stop means is powered and mounted so that it is out of the way of end-working tools or side-working tools at the loading station; this enables the machining operations to be divided among greater numbers of tools (stations), thereby in some cases cutting down on cycle time.

3,762,249

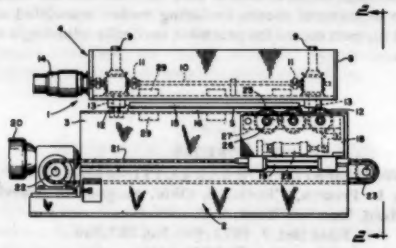
SHEARING APPARATUS

Donald J. Wheeler, 7373 Rt. 43, Kent, and Victor Lohrenz, Bedford, both of Ohio, assignors to said Wheeler, by said Lohrenz, Kent, Ohio

Continuation-in-part of Ser. No. 118,313, Feb. 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 29,430, April 17, 1970, Pat. No. 3,706,251. This application May 6, 1971, Ser. No. 140,723
Int. Cl. B26d *3/08*
U.S. Cl. 83—9 **15 Claims**

Shearing apparatus includes a transversely movable shear assembly having one or more shear blades mounted thereon which shear strip material during traversal thereof with very little or no bending of the strip material. The relative vertical position and depth of cut of the shear blades may be controlled to vary the amount of force and number of passes

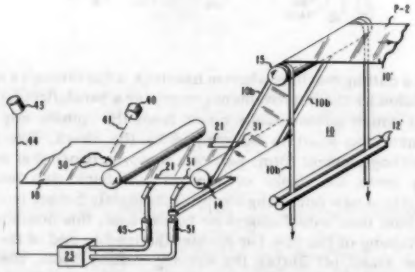
required to shear the strip material. Where plural passes are required, the transversely movable shear assembly is progressively advanced toward the strip material during each pass to progressively shear the material.



3,762,250
METHOD OF AND APPARATUS FOR HANDLING MATERIAL

C. George Huskey, Circleville, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 16, 1971, Ser. No. 153,512
Int. Cl. B26d *5/02*
U.S. Cl. 83—27 **9 Claims**



A material handling method including the steps of moving the material in a first path by first moving means; slitting the material as it moves in the first path to form beads and a web; moving the web in a second path by second moving means while moving the beads in the first path; expanding the beads and severing the web to form the material again; and, moving such material in the first path by the first moving means.

Apparatus is provided for performing the above described method.

3,762,251
APPARATUS AND METHOD FOR SKIN PACKAGING ARTICLES

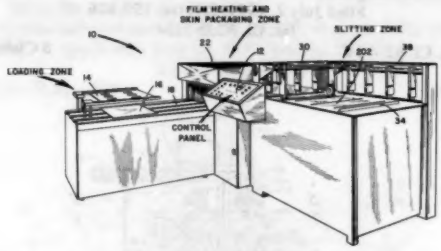
Bernhardt Madsen; Edward R. Pozsony, both of Clarks Summit, Pa., and Everett E. Collin, Camills, N.Y., assignors to U. S. Packaging Corporation, Greenville, S.C.

Division of Ser. No. 127,647, March 24, 1971. This application May 15, 1972, Ser. No. 253,442
Int. Cl. B26d *3/12*; B65b *61/08*
U.S. Cl. 83—39 **8 Claims**

A system for skin packaging articles including a loading zone for positioning articles to be packaged upon a substrate, a thermoplastic film heating and vacuum operated skin packaging zone for covering the articles with film laminated to the substrate and slitting zone for separating and trimming the individual skin packaged articles. The articles are passed to the successive zones. The loading zone may be adapted for conveyorized instead of hand loading. In some cases, where only transverse cutting of the film web is necessary, it may be desirable to eliminate the slitting zone and remove the skin packaged article or articles directly from the packaging zone. A conveniently located operating panel contains controls for effecting automatic, semi-automatic or manual operation of the entire system or any portions thereof in any manner desired.

More specific novel features of the invention comprise the provision of heat shield plates pivotally mounted for positioning above the heating elements to serve as reflectors to direct heat uniformly downwardly upon the film to be softened and deformed in the skin packaging zone and, alternatively, for positioning beneath the heating elements to shield the deformed film from further heating as desired during the vacuum skin packaging operation. Another specific feature comprises the novel arrangement of discs or other cutting means in the slitting zone to maintain an uncut border at opposed ends of the substrate board and laminated film so that the longitudinally slit strips of skin packaged articles within the border may be handled as a unit for separating into individual packages by a terminal transverse slitting operation.

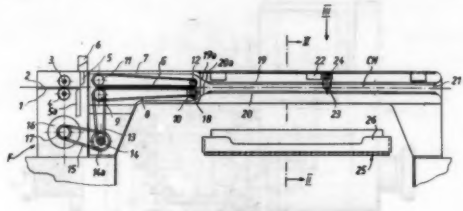
The invention visualizes the heating and packaging zone as a nucleus of the system around which selected article loading, removal and other devices may be associated to suit the requirements of specific article skin packaging operations.



3,762,252
APPARATUS FOR CUTTING AND STACKING OF PHOTOGRAPHIC FILMS OR THE LIKE

Friedrich Hujer, Grunwald; Harald Fengler, Munich, and Franz Wiesbeck, Munich-Schleissheim, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 30, 1971, Ser. No. 185,164
Claims priority, application Germany, Oct. 2, 1970, P 20 48 412.2
Int. Cl. B65h *31/02*
U.S. Cl. 83—94 **18 Claims**



An apparatus for subdividing webs of interconnected exposed and developed photographic films into sections of desired length embodies a stacking device which is located downstream of the severing station and accumulates stacks of two or more superimposed film sections which can be removed by hand for insertion into customer envelopes. Pairs of upper and lower conveyor bands between the severing station and the stacking device serve to loosely grip the film sections and to advance them into a chamber provided in the

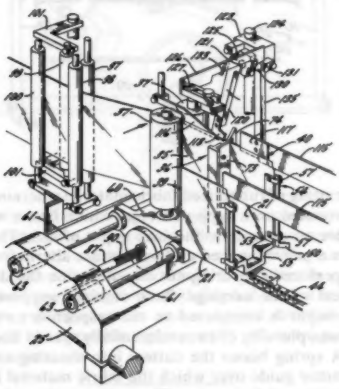
stacking device and having an open side to facilitate withdrawal of stacks. A wheel at the discharge end of the gap between the upper and lower conveyor bands straightens out the leaders of successively formed film sections to counteract their tendency to curl during introduction into the chamber of the stacking device.

3,762,253

DUAL LANE PACKAGING MACHINE

Clifford R. Loomis, Jr.; Jerald R. Wiles, and Russell A. Newton, Rockford, Ill., assignors to Rexham Corporation, New York, N.Y.

Filed Nov. 12, 1971, Ser. No. 198,226
Int. Cl. B26d *5/20*
U.S. Cl. 83—102 **9 Claims**



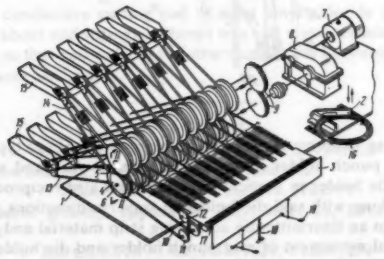
The pouches of an advancing strip of interconnected pouches are divided into two rows or lanes by shuttling the leading end portion of the strip between laterally spaced clamps and by gripping alternate leading pouches in alternate clamps prior to cutting the pouches from the strip and advancing the pouches with the clamps. Also disclosed are means for preventing slack in the strip and for keeping the upper ends of the pouches spread apart during the shuttling, means for opening the clamps, means for sealing the upper ends of the pouches of both lanes in a single station, and means for assisting in unwinding from a supply roll the pouch web from which the strip is formed.

3,762,254

DEVICE FOR CUTTING RODS TO LENGTH PIECES

Vasily Iosifovich Tsymbal, ulitsa Voznesenskogo, 25, kv. 4., and Vladimir Georgievich Gevich, ulitsa Katerinicha, 22, kv. 6, both of Kramatorsk Donetskoi Oblasti, U.S.S.R.

Filed May 19, 1972, Ser. No. 255,042
Int. Cl. B26d *3/16*
U.S. Cl. 83—107 **7 Claims**



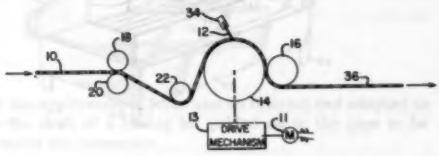
A device employed in tool industry for the mass production of length pieces. The device comprises gang shears as well as a conveyor for feeding rods to the cutting zone and means for removal of the length pieces.

3,762,255

METHOD AND APPARATUS FOR PIERCING THIN SHEET MATERIAL

David Guernsey Clash, Fairview Park, Ohio, and Theodore Frederick Kozak, Peekskill, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 20, 1971, Ser. No. 190,908
Int. Cl. B26f *1/18*; B27f *1/24*
U.S. Cl. 83—309 **10 Claims**



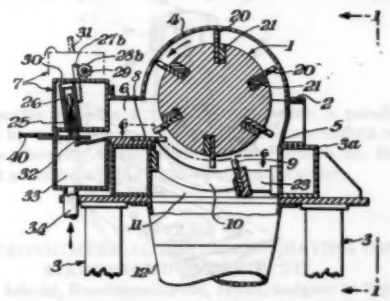
A method and apparatus for piercing thin sheet material, such as plastic film, is provided wherein the sheet material is passed between a piercing member having a plurality of independently resilient protrusions extending therefrom and a backing member having a retiform exterior surface, said piercing member or said backup member being moved relative to the other member, thereby causing said resilient protrusions to follow said retiform surface and selectively pierce said film.

3,762,256

POLYMERIC WEB SHREDDING

David Louis Frantz, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 17, 1972, Ser. No. 244,717
Int. Cl. B23d *25/00*
U.S. Cl. 83—356.3 **6 Claims**



A method and apparatus for the shredding of a polymeric web wherein the web is subdivided in two sequential steps, the first constituting a planar cut removing a segment having a serrated edge configuration and the second constituting a multiple cut transverse the segment.

3,762,257

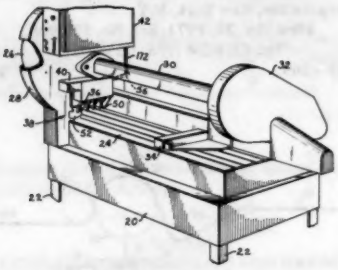
SENSING MECHANISM FOR SLICING MACHINE CONTROL SYSTEM

Victor M. Mathews, Jr., Kansas City, Kans., assignor to MKC Electronics Corporation, Kansas City, Kans.

Filed Aug. 31, 1971, Ser. No. 176,619
Int. Cl. B26d *5/00, 7/06, 4/22*
U.S. Cl. 83—364 **11 Claims**

A mechanism for sensing the cross-sectional area of a slab of a food product during processing, as in a slicing machine

where the slab is cut into drafts of predetermined weight. As the slab is advanced into the slicing blade, sensing fingers ride on the top and one side surface of the slab and respond to changes in the thickness and the width of the slab. The mechanism through a multiplier coupling provides a mechanical output indicative of the product of the thickness and the width, and is employed to drive the rotor of a step switch which, in conjunction with digital circuitry, serves to convert the mechanical output into a slice number signal for use by the electrical control apparatus of the slicing machine.



3,762,258

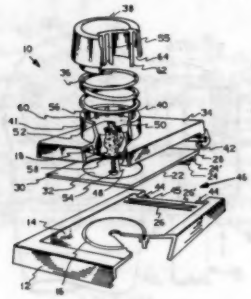
PUNCH FOR REMOVING A DESIRED SEGMENT FROM A PAPER RECORD

Louis Bender, 4 Heather Ln., Scotch Plains, N.J.

Filed Dec. 21, 1971, Ser. No. 210,388

Int. Cl. B26d *7/02*

U.S. Cl. 83—383 **8 Claims**



A punch for removing a desired segment of a paper record is described. The punch has an anvil on which the paper record is placed. The paper record is placed underneath an apertured template to register the desired segment with a cutter element located in a movably mounted cutter housing assembly disposed over the anvil. The cutter element is movably mounted to the assembly and is normally spring biased into a retracted position. The assembly further includes a frame which is provided with a clamping surface disposed over the template so that when the assembly is brought down onto the anvil the clamping surface presses against the template to clamp the paper record before the cutter severs the desired segment. A resilient clamping pad is mounted on the cutter to provide inside clamping of the paper record during a cutter operation for a sharp severing of the desired segment.

3,762,259

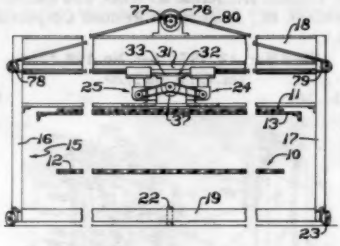
FABRIC CUTTING APPARATUS

Mathew Kuts, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,605

Int. Cl. B26d *1/20*; B23d *19/02*

U.S. Cl. 83—471.3 **12 Claims**



Bias cutting of rubberized fabric material wherein a carriage is reciprocated on a support frame, which frame is angularly adjustable to determine the bias angle of cut. The carriage supports a pair of spaced cutters that are alternatively operative to perform a shearing cut depending on the direction of movement of the carriage. Such carriage supports a motor whose output is connected to the respective cutters. Each cutter has a plurality of circumferentially spaced linear cutting edges. A spring biases the cutters into shearing engagement with a cutter guide over which the fabric material is to travel and is positioned for cutting. The cutting action of the cutters is a shearing action as the cutters and carriage are reciprocated across the support frame.

3,762,260

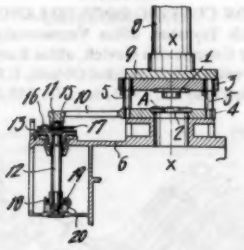
ZIGZAG BLANKING DEVICE IN A PRESS

Naonori Taniguchi, Kanagawa-ken, Sagamihara, Japan, assignor to Aida Engineering, Ltd., Sagamihara-shi, Kanagawa-ken, Japan

Filed Dec. 30, 1971, Ser. No. 214,185

Int. Cl. B26d *5/02*

U.S. Cl. 83—560 **6 Claims**



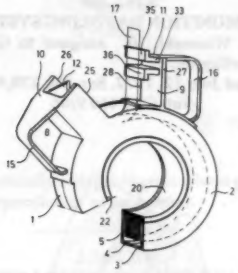
A zigzag blanking device in a blanking press of the type in which a punch holder reciprocally moves toward and away from a die holder in vertical directions and also reciprocally moves along with said die holder in traverse directions with respect to an intermittently advancing strip material and said reciprocal movement of said punch holder and die holder in said traverse directions is effected by intermittently rotating of a rotary disc provided with an eccentric pin by one-half angular distance of one complete rotation of said disc in a predetermined direction.

3,762,261

APPARATUS FOR CUTTING STRIPS FROM A CONTINUOUS BAND MATERIAL WOUND ON A STORAGE REEL

John Ture Ekenberg, Handen, Sweden, assignor to Utvecklings AB Innovia, Vallingby, Sweden

Filed June 1, 1971, Ser. No. 148,854
Claims priority, application Sweden, June 4, 1970, 7780/70
Int. Cl. B26d *7/00*
U.S. Cl. 83—649 **7 Claims**



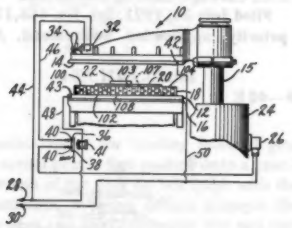
An apparatus for cutting strips from a continuous band material wound on a storage reel. The apparatus comprises a holder for the reel consisting of two ring havles turnable in relation to each other. Each of said ring halves is provided with a support projecting from said ring halves and being provided with a cutting member and a support member respectively, which are movable against each other to perform a cutting operation.

3,762,262

CONDUCTIVE CUTTING PAD

Douglas H. Crowell, Beverly; Milton R. Radcliffe, Marblehead, and William Tabroff, Peabody, all of Mass., assignor to USM Corporation, Boston, Mass.

Filed Oct. 15, 1971, Ser. No. 189,506
Int. Cl. B26d *7/20*
U.S. Cl. 83—658 **10 Claims**



A conductive cutting pad of solid vinyl chloride polymer cast about and strongly adhered to a soft metal, cellular structure so that cell walls of the structure extend between cutting surfaces on the pad.

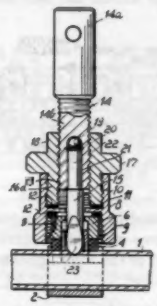
3,762,263

DEVICE FOR MAKING HOLES IN PIPES

Franco Bocceda, Viale E. Stefini 8, Milan, Italy

Filed Sept. 13, 1971, Ser. No. 176,399
Claims priority, application Italy, Mar. 15, 1971, 20561 A/71
Int. Cl. B21d *31/02*; B26f *1/24*; F16l *41/04*
U.S. Cl. 83—660 **2 Claims**

A device for making holes in pipes of copper, brass and plastics material comprising an internally threaded body provided with an externally threaded end section and adapted to removably connect to the sleeve of an offtake connector, and which houses a threaded pressure pin comprising an external



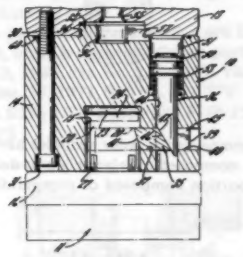
end for the application of force and an internal end adapted to act on the shaft of a boring bit guided on to the pipe to be bored inside the connector.

3,762,264

TOOL HOLDER FOR PUNCHES AND THE LIKE

William B. Scott, Steward, Ill., assignor to W. A. Whitney Corp., Rockford, Ill.

Filed Sept. 29, 1971, Ser. No. 184,685
Int. Cl. B21d *37/04*; B23b *31/06*; B23q *3/12*
U.S. Cl. 83—698 **7 Claims**



The holder includes a collar within which a punch is clamped by radially movable jaws. The jaws are shifted radially into clamping engagement with the punch by fluid-operated actuators which extend axially of the collar.

3,762,265

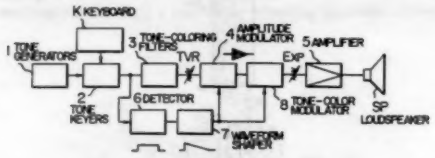
ELECTRONIC MUSICAL INSTRUMENT HAVING TONE START PROMINENCE CIRCUIT

Takeshi Adachi, Hammamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Dec. 27, 1971, Ser. No. 212,014
Claims priority, application Japan, Dec. 25, 1970, 45/117721 (utility model); Dec. 25, 1970, 45/130642 (utility model)
Int. Cl. G01h *1/02*
U.S. Cl. 84—1.24 **2 Claims**

An electronic musical instrument having a conventional music playing circuit arrangement with a tone signal passage including tone generators, tone keyers, tone coloring filters, an amplifier and a loudspeaker is further provided with a tone start prominence circuit arrangement. The arrangement comprises an amplitude modulator inserted in the tone signal passage, a detector connected to the tone signal passage for detecting the start of the tone signal being played, and a waveform shaper producing a percussive waveform signal

upon receipt of the detected signal and controlling the modulator so that the start of the tone signal be percussively emphasized. As an improved embodiment, a tone color modulator is further inserted in the tone signal passage and is controlled by the above-mentioned detected signal, thereby emphasizing the start of the tone signal more clearly.



3,762,266

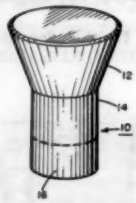
BIMETAL FASTENER

Edward L. Thellmann, Walton Hills, Ohio, assignor to Gould Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 60,342, Aug. 3, 1970, abandoned. This application Nov. 9, 1970, Ser. No. 87,921

Int. Cl. F16b *19/04*

U.S. Cl. 85—37 **6 Claims**



A rivet of compacted powder particles having a head and a shank portion composed of relatively non-deformable material and a tail portion composed of comparatively deformable material.

3,762,267

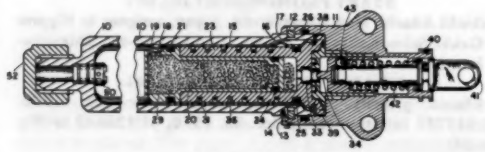
MINIATURE INITIATOR ASSEMBLY

Bruce W. Travor, Holland, Pa., and Lennord L. Pitney, Park Rapids, Minn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 26, 1972, Ser. No. 266,109

Int. Cl. F42c *9/00*

U.S. Cl. 89—1 B **3 Claims**



A miniature initiator assembly which is adjusted to a selected one of several variable time delay settings immediately prior to use. A spool has an open end telescopingly received between the cartridge case and propellant container which are located in the initiator chamber, and the spool hub portion has a centrally located primer for actuation by a firing pin mechanism mounted in the initiator cap which is keyed to the spool and rotatably mounted relative to the initiator chamber. The cartridge case is keyed to both the chamber and container, the container having predeterminedly spaced sidewall ignition holes filled with igniter mix. An external spiral groove on the spool contains a pyrofuse cord and predeterminedly spaced lateral passages, with one end of the cord extending through one of the passages adjacent the primer. Relative rotation of the spool and container will enable a selected ignition hole to align with the cord to provide a desired effective length of the delay cords.

3,762,268

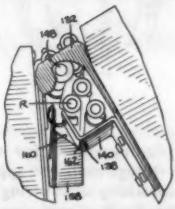
AMMUNITION HANDLING SYSTEM

John H. Gaye, Winooski, Vt., assignor to General Electric Company, Burlington, Vt.

Filed July 12, 1972, Ser. No. 270,934

Int. Cl. F41d *9/06*

U.S. Cl. 89—34 **9 Claims**



An ammunition storage and feeding system includes a plurality of ammunition storage and feeding containers which may be manually interlocked seriatim and whose contained belts of ammunition will, thereby, be respectively interlocked seriatim, all at the gunner's convenience, during firing.

3,762,269

TRIPED MOUNTING WITH LEVELLING DEVICE FOR PROJECTILE LAUNCHER

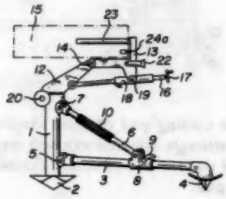
Maurice Rusbach, Vernier-Geneva, Switzerland, assignor to Sarmac S.A., Carouge/Geneva, Switzerland

Filed July 26, 1971, Ser. No. 166,111

Claims priority, application Switzerland, Aug. 6, 1970, 11827/70

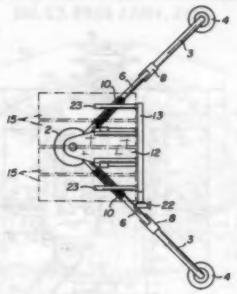
Int. Cl. F41f *3/04*

U.S. Cl. 89—40 E **1 Claim**



A tripod mounting for suppprting a projectile launching device has an upright mast and a pair of arms pivotally connected to the mast for vertical swinging movement relative to the mast in vertical planes that are perpendicular to each other. The arms are lockable in vertically adjustable positions. The mast carries the projectile launching device at its upper end; and the tripod can be levelled, that is, the mast made

precisely vertical, by only two adjustments, one for each arm, instead of by successive approximations as in previous devices



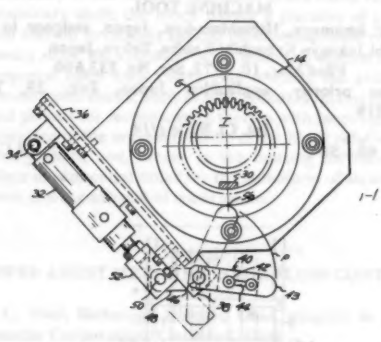
that have two vertically swingable arms whose planes of movement are not perpendicular to each other.

3,762,270

AUTOMATIC LOADER FOR INTERNAL GEARS

Russell W. Anthony, Harper Woods, and Walter Frankiw, Grosse Pte. Park, both of Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Dec. 9, 1971, Ser. No. 206,404
Int. Cl. B23f *23/04*
U.S. Cl. 90—1 **10 Claims**



In an automatic loader for loading internal gears into a machine, the internal gear is first pushed onto a gear-like shaving tool. If the teeth of the gear do not mesh with the teeth of the tool an automatic nudging device engages the outside diameter of the gear and simultaneously lifts and turns it until the teeth fall into mesh.

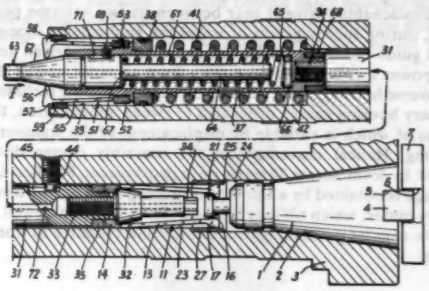
3,762,271

DEVICE FOR CLAMPING A TAPER SHANK TOOL-HOLDER IN THE NOSE OF A ROTARY MACHINE-TOOL SPINDLE

Rene Poincenot, Paris, France, assignor to Societe Anonyme dite:Ratier-Forest, Paris, France

Filed June 1, 1971, Ser. No. 148,807
Int. Cl. B23c *5/26*
U.S. Cl. 90—11 D **5 Claims**

A device for clamping a tapershank tool-holder in the nose of a rotary machine-tool spindle, of the type comprising a retaining element capable of hooking on a mating element of the tool-holder and urged axially in the direction of clamping by a restoring spring, said retaining element being displaced, against the force of said spring, by an unclamping control member axially slidable within the machine spindle. It is possible to increase the strength clamping the tool-holder while the effort necessary to unclamp it may be maintained to a relatively low value, by the fact that the device further comprises a



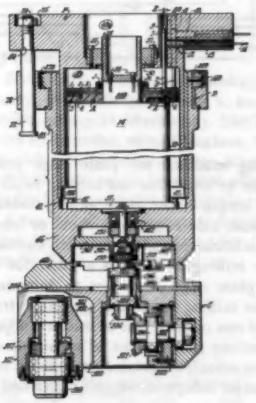
locking member axially connected to the retaining element and engaging a locking cam secured to the machine spindle, with said locking member being subjected to the action of a control member.

3,762,272

SELF-ADJUSTING EXTENSIBLE GEAR TRAIN AND ASSEMBLIES CONTAINING SAME

Francisco Escobedo, Inglewood, Calif., assignor to Fresco Industries, Inc., Gardena, Calif.

Continuation-in-part of Ser. No. 32,805, April 29, 1970, Pat. No. 3,690,220, which is a continuation-in-part of Ser. No. 731,494, May 23, 1968, Pat. No. 3,526,167. This application Dec. 23, 1971, Ser. No. 211,279
Int. Cl. B23g *1/32*; B23c *9/00*; F16h *35/00*
U.S. Cl. 90—11.58 **16 Claims**



Annular housing originating or receiving a rotary drive shaft carries a transversely displaceable housing selectively shiftable in a straight line and containing a rotary shaft driven thereby which is laterally displaceable, by movement of the transverse housing, to either side of coaxial alignment of the two shafts. The pair of shafts are rotatable as a unit, even during such displacement of the driven shaft, by a connecting train of three gears, the intermediate of which has its shaft off-center-traversing a partially rotatable plate which separates the drive gear and driven gear near the intersection of the two

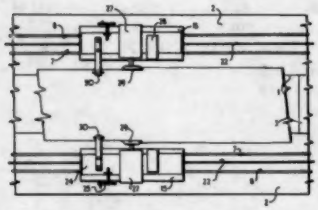
housings. In addition to the rotatable plate, self-aligning means includes a flat transverse link having one end rotatable about a boss of the rotary plate which embraces the offcenter intermediate shaft; the other end journals the driven shaft and projects a parallel stud which serves as a pivot point for the link during an intermediate segment only of the total shift of the displaceable (driven) gear between its two extreme positions, during such segment of travel the stud passing along a short guide channel of the primary housing. The driven gear can power a rotary tool projecting from an outer end of the transverse housing; axial rotation of whole assembly including primary housing causes distal tool to sweep annular area, the radius of which is variable by displacement of the transverse housing. Helical movement of the assembly causes distal cutter to form screw threads on a workpiece. Further advantage is obtained by a tiltable positioning head for the distal rotary cutter, which tilt may increase the radial span as well as enable angular positioning of the cutter shaft relative to workpiece.

3,762,273

MILLING MACHINE

Douglas L. Sprung, Calgary, Alberta, Canada, assignor to International Portable Pike Mills, Ltd., Calgary, Alberta, Canada

Filed Nov. 29, 1971, Ser. No. 202,774
Int. Cl. B23d *15/06*
U.S. Cl. 90—15 R **4 Claims**



A milling machine for plate edge preparation having a spaced pair of track-carried milling head carriages movable the entire length of the plate and operable to simultaneously machine both side edges of a sheet or laminate plate of substantial thickness. Mounted on each carriage is a transversely adjustable milling head with a powerful intimate motor, as well as a plate edge depressor to dampen chatter and plate flutter. The milling head carriages have track-engaging guide wheels and one of each pair of tracks is adjustable for trueing.

The machine may consist of separable components, transportable on wheeled vehicles, enabling it to be assembled and operated as an independent, self-contained unit in the field.

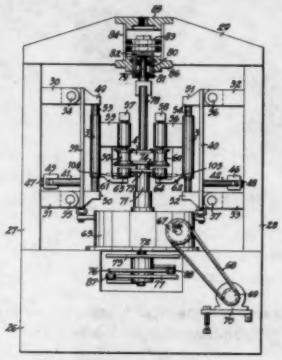
3,762,274

DEVICES FOR AUTOMATICALLY SHAPING AND PROFILING WORKPIECES

Gerard B. Boucherie, Potaadestraat 1, Rumbeke, Belgium

Filed Nov. 10, 1969, Ser. No. 875,363
Claims priority, application Belgium, Nov. 18, 1968, 723970
Int. Cl. B23b *1/18*
U.S. Cl. 90—13 B **10 Claims**

A device for improving shaping and profiling milling machines, according to which means are provided to impart, between the milling cutter or cutters and the workpiece, an additional relative displacement in order to influence the feed-



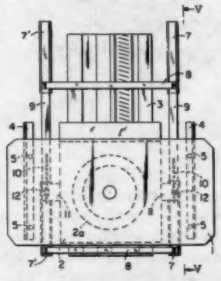
ing velocity of the workpiece with respect to the milling cutter or cutters.

3,762,275

SUPPORTING DEVICE IN A ROTARY TABLE FOR A MACHINE TOOL

Yoshiaki Imamura, Hiroshima-ken, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1972, Ser. No. 233,690
Claims priority, application Japan, Dec. 29, 1970, 45/121019
Int. Cl. B23c *1/14*
U.S. Cl. 90—58 C **4 Claims**



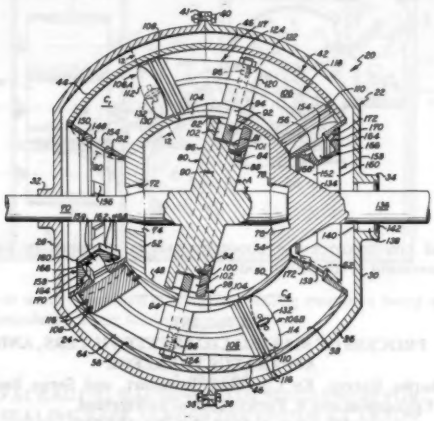
A supporting device for a rotary table for a machine tool comprises support members disposed on a foundation on the opposite sides of a bed member in parallel to the direction of rectilinear feed of a table body for supporting the table body by the intermediary of hydraulic jack means provided at the opposite ends along the lengthwise direction of the table body; the supporting device further comprises bridge bed members disposed between respective support members and the bed member in parallel to the support members, and a pair of table body supporting bridge members having their respective leg portions slidably supported by the bridge bed members so as to be bridged over the bed member, the pair of table body supporting bridge members are constructed so as to be movable together with the table body along the bridge bed members.

3,762,276

STEAM ENGINE

Gregory J. Gates, 1273 Ponce de Leon Ave., Atlanta, Ga.

Filed May 13, 1971, Ser. No. 142,897
Int. Cl. F01b *13/04, 3/00*
U.S. Cl. 91—197 8 Claims



A steam engine including a stationary housing through which passes a "stationary" shaft, an engine block mounted in the housing for rotation relative to the shaft, the block having a power output shaft rigidly connected therewith and extending externally of the housing in coaxial relationship relative to the stationary shaft; the block having a plurality of cylinders formed therein in radially spaced relationship relative to said stationary shaft, the cylinders being arcuately shaped and having opposed open ends converging towards the axis of the aforementioned shafts, each of said cylinders receiving double headed pistons for reciprocation therein with faces inclined in the direction of the normal rotation of the block relative to the stationary shaft; and, means in the housing for valving the cylinders in sequential order for the admission of steam under pressure and the exhaust of spent steam.

3,762,277

POWER ASSIST MECHANISM FOR FLUID CONTROL VALVES

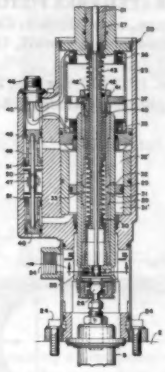
John C. Paul, Richmond Heights, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Division of Ser. No. 188,218, Oct. 12, 1971, Pat. No. 3,716,075. This application Dec. 4, 1972, Ser. No. 312,140
Int. Cl. F15b *9/10*
U.S. Cl. 91—376 12 Claims

A power (hydraulic or pneumatic) assist mechanism for a spool valve assembly and the like characterized in that a manually actuated control valve member has a lost motion spring connection with the spool to selectively vent either side of a double acting fluid motor whose piston is connected to the spool so that fluid pressure in the unvented side of the motor is effective to move the piston and spool in the same direction as the movement of the control valve member. The invention is further characterized in the provision of a shuttle valve member which is guided in the cylinder housing of the power assist mechanism in such manner as to define annular orifices of uniform radial width between the ends of said shuttle valve member and a surrounding bore in the cylinder housing, the differential pressure drops across said orifices due to fluid flowing to the vented and unvented sides of said power assist motor being effective to move the shuttle valve member to a position restricting continued flow to the vented side of said motor.

Another characterizing feature of this invention is the provision of a power assist mechanism having a portative electromagnet means operatively connected to the spool so as to constitute a latch or detent to retain the spool in a selected operating position until released either by operation of the aforesaid manually actuated control valve member or by de-energization of said electromagnet means.

Yet another characterizing feature is the provision of a power assist mechanism having means which imparts an added load on the manually actuated control valve member to provide a sensory indication of an intermediate operating position of the spool from which the actuation of the control valve



member and spool may be continued under such added load to another operating position whereat said control valve member and spool are retained by electromagnetic means until released as aforesaid.

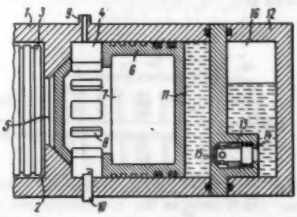
Yet another characterizing feature is that in the case of a pneumatic power assist mechanism check valves are provided between the aforesaid shuttle valve and the chambers on opposite sides of the power assist piston, and a stabilizing orifice intercommunicates said chambers to minimize fluttering of the power assist piston and the spool.

3,762,278

PULSE PISTON DRIVE

Vitaly Evgenievich Strizhenko, ulitsa Osnovyanskaya 56; Igor Pavlovich Komnatny, ulitsa Cheljuskintsev, 6, kv. 1; Sergei Vasilievich Yatsenko, prospekt Moskovsky 204/1, kv. 36; Vadim Grigorievich Kononenko, ulitsa Chkalova, 15, kv. 12; Stanislav Anisimovich Maznichenko, ulitsa Kharkovskikh divizy, 18, kv. 9; Viktor Alexeevich Stelmakh, ulitsa Kirova, 18, kv. 2, and Serafim Vasilievich Schekochikhin, 1 Lesoparkovsky pereulok, 5, kv. 76, all of Kharkov, U.S.S.R.

Filed Oct. 29, 1971, Ser. No. 193,650
Int. Cl. F15b *11/08, 13/042*
U.S. Cl. 91—468 1 Claim



A pulse piston drive having a pulse chamber with two cavities, one accommodating a piston and the other cavity being

filled with an energy medium. The cavities communicate through an opening closed by a differential valve. The closing member of the valve consists of a hollow piston positioned in the cavity for the energy medium. This piston divides the cavity into portions, one of which communicates with the inner cavity of the piston and the other accommodates a drive for forcedly closing the closing member of the valve.

3,762,279

BRAKING SYSTEM FOR HIGH ACCELERATION OPERATED FREE PISTONS

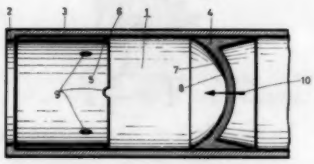
Fritz Zeyher, Ottobrunn, near Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Ottobrunn near Munich, Germany

Filed Mar. 13, 1972, Ser. No. 233,909

Claims priority, application Germany, Apr. 1, 1971, P 21 15 770.0

Int. Cl. F01b *11/02*

U.S. Cl. 92—85 **4 Claims**



A braking system for high acceleration operated free pistons comprises a cylinder having one end with an inturned flange which provides a stop or abutment for a deformable shell in the form of a cylinder which is opened at each end. The piston, which is freely movable in the cylinder in a direction toward the shell is provided with a concave face on the side facing toward the shell and with a rim which engages behind an inwardly turned rim of the braking shell. The shell is deformed inwardly into the concave recess of the forward end of the free piston upon the impact of the piston against the shell and the deformation of the shell provides a shock absorption for the impact of the piston.

3,762,280

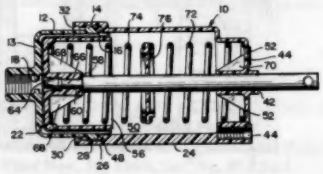
PISTON MOTOR DEVICE

Kenneth G. Kreuter, Goshen, Ind., and Lyall O. Steger, Richmond, Va., assignors to Robertshaw Controls Company, Richmond, Va.

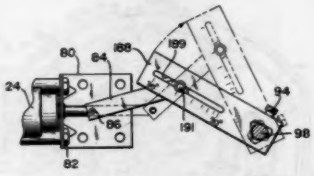
Continuation of Ser. No. 844,928, July 25, 1969, abandoned. This application Feb. 16, 1972, Ser. No. 226,953

Int. Cl. F01b *19/00, 9/00*

U.S. Cl. 92—98 D **1 Claim**



A piston motor device having a piston rod actuating mechanism mounted in a two-piece housing assembled with a snap fit and having a linkage assembly connected to the outer end of the piston rod for moving a shaft member clockwise



and counterclockwise about its axis in response to linear movement of the piston rod.

3,762,281

PROCESS OF MAKING CIGARETTE FILTERS, AND APPARATUS THEREFOR

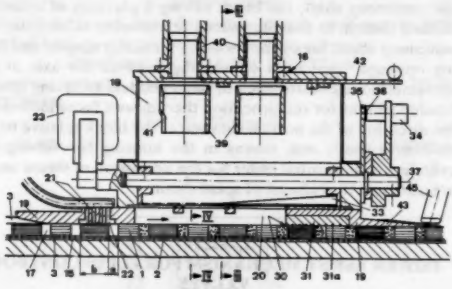
Charles Burrus, En Chatillon, Boncourt, and Serge Boegli, Eggbuehlstrasse 8, Zurich, both of Switzerland

Filed Oct. 1, 1971, Ser. No. 185,740

Claims priority, application Switzerland, Oct. 12, 1970, 15101/70

Int. Cl. B31d *5/00*

U.S. Cl. 93—1 C **24 Claims**



In a process of making multiple filters for cigarettes, a succession of uniformly spaced filter wads are secured to a continuously fed cover strip; this assembly is moved past (and in contact with) a filler head having a filling aperture while a suction device — disposed ahead of the filling aperture and above the wads — produces a partial vacuum within a space (between two adjacent wads) whereby filter material moves from the filling head into the evacuated space. The edges of the cover strip then are brought together and overlapped and finally are fixedly secured to each other.

3,762,282

METHOD AND DEVICE FOR MANUFACTURING BAGS FROM THIN-WALLED TUBULAR FOIL IN A CONTINUOUS PROCESS

Leonard Van Der Meulen, 30 D Maria de Molina, Madrid, Spain

Filed Feb. 22, 1972, Ser. No. 228,156

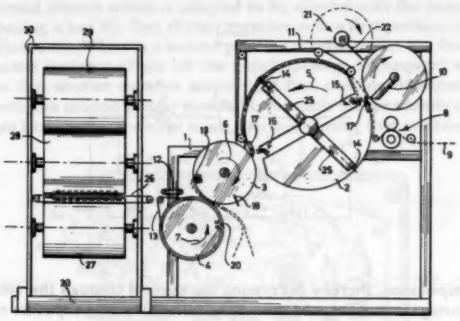
Claims priority, application Netherlands, Feb. 23, 1971, 7102415

Int. Cl. B31b *23/14, 23/60*

U.S. Cl. 93—35 VL **5 Claims**

A method and device for manufacturing bags for household refuse, starting from thin-walled synthetic tubular material, in

which said material is tensioned upon the periphery of a drum,



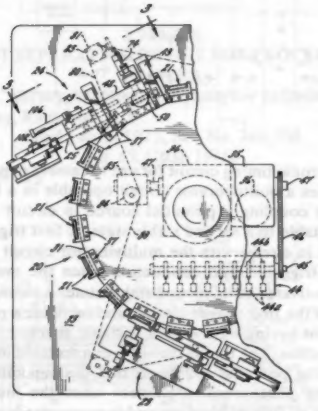
one or more combined cutting and sealing members being accommodated along said drum periphery.

3,762,283

PACKAGING MACHINE WITH MECHANISM FOR SEALING TAPE ACROSS THE END OF A CARTON

Robert E. Renner, Rockford, Ill., assignor to Rexham Corporation, New York, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,041
Int. Cl. B31b *1/90*; B65b *51/06*
U.S. Cl. 93—36 R **6 Claims**



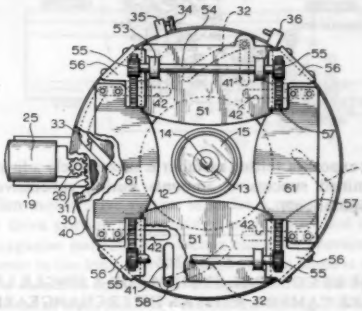
A carton is advanced step by step along a circular path by a rotary carrier and is sealed closed by a strip of sealing tape delivered to a sealing station by a shuttle as the carton is advanced into the sealing station. The shuttle includes an elongated tubular sheath, the tape being threaded through the sheath and held therein by a gripper. After the tape has been delivered to the sealing station, a second gripper clamps an exposed portion of the tape to the carton, the first gripper is released from the tape, and the sheath is slid reversely along the tape and back to a home station to leave the leading end portion of the tape stretched across the flaps of the open end of the carton. A sealer is then pressed against the tape and heat seals the tape to the carton flaps. Upon completion of the sealing, the second gripper is released and a cutter is advanced to sever the tape behind the trailing flap of the carton. Once the tape is cut, the sealer and cutter are retracted and the sealed carton is advanced out of the sealing station as an incident to the delivery of another carton to the sealing station.

3,762,284

METHOD AND APPARATUS FOR GRADING THE SCREEN OF A BLACK SURROUND COLOR TUBE

Yong S. Park, Hanover Park, and Raymond J. Pekosh, Niles, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 28, 1972, Ser. No. 248,751
Int. Cl. G03b *27/00*
U.S. Cl. 95—1 R **5 Claims**



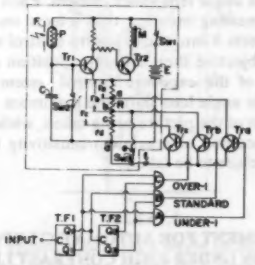
The process of screening a black surround on the faceplate of a rectangular color tube incorporating an automatic shading mechanism in the lighthouse varying the distribution of actinic energy over the sensitized coating on the faceplate for controlling the image size of the projected shadow mask apertures in a particular manner to produce images of decreasing area from the center to the edge of the faceplate with images of similar area located along a substantially rectangular locus centered with respect to the faceplate. The mechanism for controlling the exposure intensity over the faceplate comprises two pairs of movable plates for repetitively shading areas of the faceplate from the energy source.

3,762,285

CONTROL APPARATUS FOR VARYING CAMERA EXPOSURE CONDITIONS

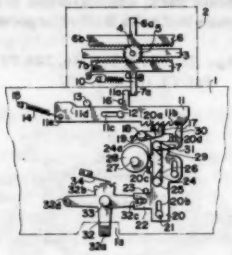
Shohei Tenkumo, Sakai-shi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Japan

Filed Apr. 7, 1971, Ser. No. 132,105
Claims priority, application Japan, Apr. 7, 1970, 45/29021
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CE **7 Claims**



The exposure conditions determined by a light receptive element and the control of an exposure are varied in accordance with at least one of a number of exposure parameters by control apparatus wherein a member is set in accordance with at least one of the exposure parameters. An exposure setting member is movable from a first position and positions shifted therefrom. A first operating mechanism is movable from a rest position to an operating position to shift

the exposure setting member and a second operating mechanism moves the first operating mechanism predetermined distances from the rest position to its operating posi-



tion. The exposure setting member is successively adjusted by predetermined successive amounts during successive film winding operations.

3,762,286

EXPOSURE CONTROL SYSTEM FOR A SINGLE LENS REFLEX CAMERA WITH AN INTERCHANGEABLE OBJECTIVE LENS

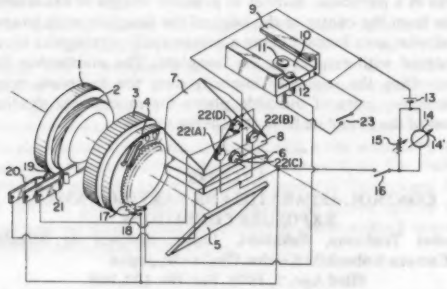
Goro Hasegawa, Fuchi-shi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 16, 1971, Ser. No. 163,233

Claims priority, application Japan, July 23, 1970, 45/64549

Int. Cl. G03b 7/04

U.S. Cl. 95—10 C **22 Claims**



In the disclosed system, a plurality of electro-photosensitive elements are distributed to sense light at different vertical positions in the field of view transmitted by the interchangeable objective of a single lens reflex camera. Each objective includes a compensating member that selects one of the elements and connects it into the exposure control system of the camera. Each objective then shifts the position of maximum light sensitivity of the exposure control system to different positions. A wide angle lens shifts the maximum sensitivity to the lower portion of the picture being taken, while a telephoto lens shifts the position of maximum sensitivity to the upper portion of the picture to be taken.

3,762,287

ARRANGEMENT FOR AUTOMATIC EXPOSURE CORRECTION UNDER HIGH CONTRAST LIGHTING CONDITIONS IN PHOTOGRAPHIC CAMERAS

Johann Roth, Schwabhausen, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

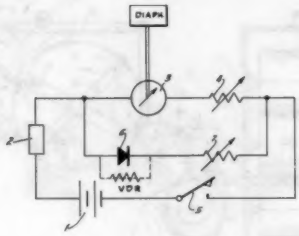
Filed Oct. 6, 1971, Ser. No. 187,046

Claims priority, application Germany, Oct. 10, 1970, P 20 49 800.4

Int. Cl. G01j 1/44; G03b 7/08

U.S. Cl. 95—10 C **7 Claims**

A voltage-responsive diode or resistance is connected in parallel with the measuring instrument controlling the shutter opening in an automatic exposure arrangement. High voltage drops across the measuring instrument cause a low-parallel



impedance, thereby decreasing the current through the measuring instrument, and thereby in turn correcting exposure errors resulting from the high-contrast lighting conditions.

3,762,288

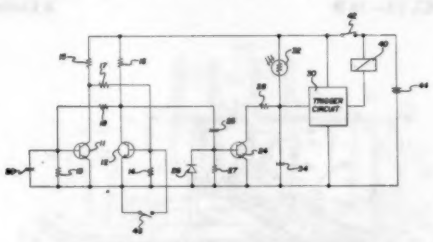
EXPOSURE CONTROL TIMING CIRCUIT

Peter Schmidt, Stuttgart-Wangen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 3, 1972, Ser. No. 231,488

Int. Cl. G03b 7/08

U.S. Cl. 95—10 CT **1 Claim**



An electronic timing circuit for use in camera exposure control includes a multivibrator circuit operable in a first stable state upon coupling a potential source in circuit therewith, and activatable to a second stable state. A first trigger circuit is coupled in circuit with the multivibrator circuit to be momentarily triggered into conduction when the multivibrator circuit is activated to its second stable state. A timing circuit is coupled to the first trigger circuit, and includes a photosensitive element having a parameter variable as scene light varies and a capacitor. The timing circuit is connectable in series circuit with the potential source so that the capacitor charges through the photosensitive element when the multivibrator circuit is in its first stable state and is momentarily discharged through the trigger circuit when the multivibrator circuit changes to its second stable state. The capacitor recharges through the photosensitive means to a predetermined potential level in a time interval related to the value of the parameter. A second trigger circuit is responsive to the potential charge on the capacitor when the potential reaches the predetermined level.

3,762,289

CAMERA SHUTTER ASSEMBLY

Israel Nesson, Fair Lawn, N.J., assignor to Berkey Photo, Inc., Paramus, N.J.

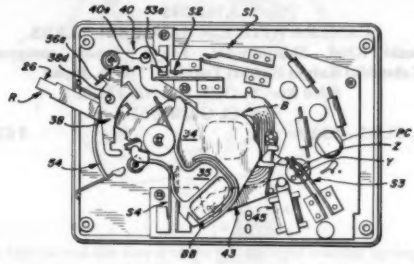
Filed Oct. 11, 1972, Ser. No. 296,678

Int. Cl. G03b 7/08, 9/16, 9/26

U.S. Cl. 95—10 CT **7 Claims**

A camera shutter assembly is provided which is of electromechanical construction and permits accurate automatic shutter speed control. The assembly embodies first and second

shutter members which are adjustably mounted on a panel provided with an opening, the latter being aligned with the lens of the camera. The first shutter member has an aperture formed therein which is adapted to be aligned with the panel opening when the first shutter member is in a first position of adjustment. When in a second position of adjustment, the first shutter member closes off the panel opening. Subsequent to the first shutter member assuming it first position of adjustment, the second shutter member is movable independently of said first shutter member to an aperture-closing first position.



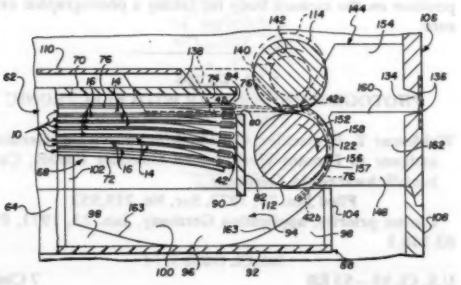
The second shutter member is moved by the first shutter member to a second position of adjustment wherein the second shutter member is out of registration with the panel opening. A cocking lever and trigger mechanism are provided which operate in a predetermined sequence with respect to one another and in conjunction with a plurality of latch means whereby the time sequence of relative movement of the first and second shutter members to their first positions of adjustment is automatically controlled in relation to the light intensity surrounding the object being photographed.

3,762,290

PRINT SEPARATING DEVICE FOR PROCESSING CAMERA

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 3, 1972, Ser. No. 268,930
Int. Cl. G03b *19/10*
U.S. Cl. 95—13 **12 Claims**



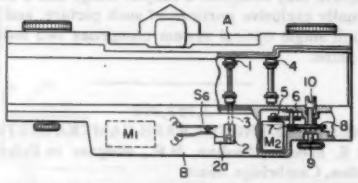
In a camera adapted to expose and initiate processing of a self-processing film unit, the film unit including a print card separably attached to a pod assembly having a carrier sheet with a transverse stiffening bar at its leading end, a novel device is provided for separating the print card from the pod assembly during film unit processing and for directing the pod assembly to a storage position. The device includes an arcuate guide member having outer and inner parts. The outer part engages the stiffening bar and thereby directs the pod assembly in an arcuate path away from the print card and toward the storage position. The inner part engages the narrower carrier sheet and thereby prevents the sheet from buckling as the pod assembly is moved in the arcuate path.

3,762,291

FILM MOTOR DRIVE SYSTEM

Shuji Kimura, and Koichi Daitoku, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed June 1, 1972, Ser. No. 258,836
Claims priority, application Japan, June 2, 1971, 46/38507
Int. Cl. G03b *1/12, 9/68*
U.S. Cl. 95—31 AC **3 Claims**



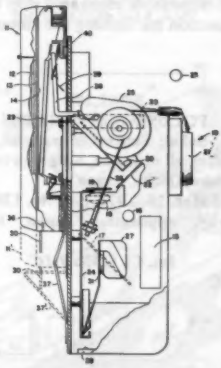
A film motor drive system includes a motor provided in a motor drive portion and a second motor provided in a long-film magazine portion. An electric circuit is provided so that the motor in the long-film magazine portion alone is energized when a camera's sprocket is made free to rotate by upward movement of a camera's rewind button during film loading or at the end of photo-taking operation. Thus, the forward and rearward leaders of the film may be taken up before and after the photo-taking operation. The motor drive system may further include forward counter means and/or reverse counter means connected with a switch inserted in the electric circuit.

3,762,292

CAMERA SYSTEM INCLUDING OPERATION SEQUENCE CONTROL

Albion P. Bjork, Lincoln, Mass., and James M. Conner, Mamaroneck, N.Y., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 77,916, Oct. 5, 1970, Pat. No. 3,726,198.
This application June 15, 1972, Ser. No. 263,003
Int. Cl. G03b *19/02*
U.S. Cl. 95—36 R **31 Claims**



A camera system which, on a single sheet of photographic material, exposes first one area of such sheet of photographic material and thereafter another area of such sheet of photographic material. An optical system for forming images on such photographic material during such exposures. A film holder movable to present such photographic material sheet areas in sequence to such optical system. A system of operational control of such camera system including such movement of such film holder. One part of such control system including indicator lights responsive to various steps of operation of such camera system, including such movement of such

film holder. Another part of such control system comprising a covering device which prevents film removal when such film holder is at one point of such movement. A camera system in which each such exposure comprises a subject image and the image of a data card on mutually exclusive portions of each such photographic material sheet areas. A camera system in which two separate pictures may be provided, one in each of two separate areas of photographic material, using a single optical system and movable photographic material, in which each picture may comprise a subject image and a data image on mutually exclusive portions of such picture, and in which each such single optical system comprises two independent optical paths.

3,762,293

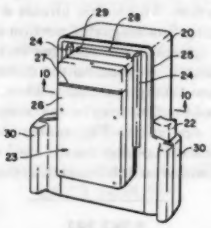
MULTIPLE PHOTOGRAPH CAMERA SYSTEM

Donald E. Moodie, Nashua, N.H., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 26, 1971, Ser. No. 192,166

Int. Cl. G03b *19/02*

U.S. Cl. 95—37 **26 Claims**



A camera system including a first section for forming an image at a focal plane and a second section slidably mounted on the first section for retaining a sheet of photographic material at a focal plane. A spring snap-action arrangement yieldably restrains the camera's second section in two terminal positions with respect to the first section of the camera system. Complementary light barrier labyrinth structure respectively forming part of the two camera sections is structured to facilitate the aforementioned sliding movement essentially without friction. Adjustable elongated stop bars are provided on one camera section for limiting the amount of such sliding movement.

3,762,294

FOCUSING APPARATUS

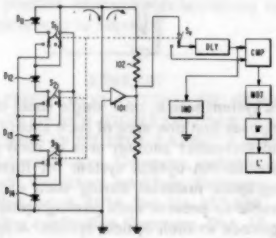
Takeshi Kosaka, Sakai; Sanjiro Murakami, Kobe, and Akio Yamanishi, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 26, 1971, Ser. No. 128,455

Claims priority, application Japan, Mar. 26, 1970, 45/25732

Int. Cl. G03b *3/10*

U.S. Cl. 95—44 C **10 Claims**



A focusing apparatus for a photographic camera, projector and the like has a plurality of photoelectric elements, each of which has a substantially constant current characteristic, with respect to the impedance of its load, connected in series. A plurality of these elements are arranged in the image plane of an objective lens and connected across the series outputs thereof is a detector and electroservomechanism operatively linked to the optical system, for adjusting the focusing of the optical system so that the potential difference between each end of the photoelectric elements will be maintained at a minimum value.

3,762,295

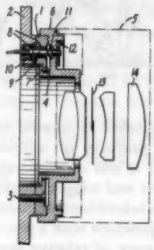
CAMERA WITH EXCHANGEABLE LENS

Kiyoshi Kitai, Shinjuku-ku, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan

Filed Apr. 9, 1971, Ser. No. 132,835

Int. Cl. G03b *9/62*

U.S. Cl. 95—53 EA **3 Claims**



A camera body having a mount for removably mounting different lens units thereon. The lens units have a built-in shutter and a built-in circuit for opening and closing the shutter. The camera body has a built-in circuit electrically connected to the lens unit circuit when it is mounted on the camera for taking an exposure. The circuit in the camera has the major electrical components such as a built-in light meter and power source for controlling the operation of opening and closing the shutter. The camera body and the lens unit each have a set of electrical contacts connected at different points to the circuits therein and provided with respective spherical contact surfaces for making electrical connection between the circuits automatically when the lens unit is attached or mounted im position on the camera body for taking a photographic exposure.

3,762,296

PHOTOGRAPHIC SHUTTER WITH ELECTRONIC TIMING CIRCUIT

Waldemar T. Rentschler, Calmbach/Schwarzwald, Germany, assignor to Prontor-Werk Alfred Gauthier GmbH, Calmbach/Schwarzwald, Germany

Filed Jan. 24, 1972, Ser. No. 219,952

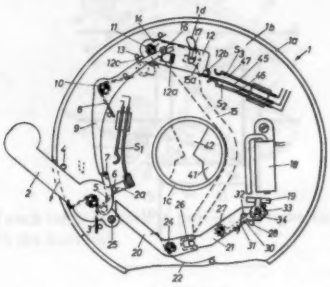
Claims priority, application Germany, Jan. 23, 1971, P 21 03 148.1

Int. Cl. G03b *9/14*

U.S. Cl. 95—53 EB **7 Claims**

The shutter comprises shutter blades of relatively large mass which are displaceable, in the opening direction, by means of a driving force which is weak with respect to the inertia of the shutter blades, and which are displaceable, in the closing direction, by a relatively strong driving force. The edges of the shutter blades are formed to produce a diaphragm aperture such that there is an exposure time-aperture value corresponding to each instant of time following beginning of the displacement in the opening direction. The position of the shutter blades at any instant during the displacement in the opening direction defines a predetermined aperture, and the exposure time-aperture value has a graduation which is uniform with respect to exposure. The driving means are springs, acting on levers and the like, for displacing the shutter

blades. The driving force for displacing the shutter blades in the opening direction may be derived from two springs, with the first spring being stronger than the second and put out of action after an initial movement of the blades so that further movement of the blades is due to the kinetic energy imparted



to the blades and the force of the second and weaker spring. A magnetic lock is provided under the control of the timing circuit to lock a displaceable part which is released by triggering of the shutter, and the magnetic lock releases this part after a time interval determined by the electronic timing circuit.

3,762,297

ELECTROMAGNETIC CONTROL MECHANISM FOR ELECTRIC SHUTTER

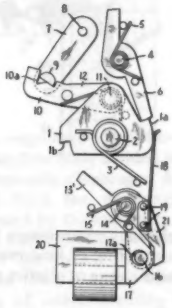
Kiyoshi Kitai, Tokyo, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1972, Ser. No. 315,847

Claims priority, application Japan, Dec. 16, 1971, 46/102125

Int. Cl. G03b 17/00; H01f 3/00

U.S. Cl. 95—53 EB **5 Claims**



An electromagnetic control mechanism for an electric shutter of a camera. The shutter-operating mechanism is controlled by a biased control lever which is linked to the armature of an electromagnet that controls release of the control lever which releases the shutter-operating mechanism for closing the shutter. A pressure-applying member applies a biasing force or pressure to the armature urging it to its attracted position which is maintained by the electromagnet when energized prior to removal of this pressure force. The application of this pressure force eliminates any effect of "play" in the mechanical connection between the armature and the biased control lever, which is released by the electromagnet when de-energized, so that a smooth, positive and precise closing of the shutter is effected.

3,762,298

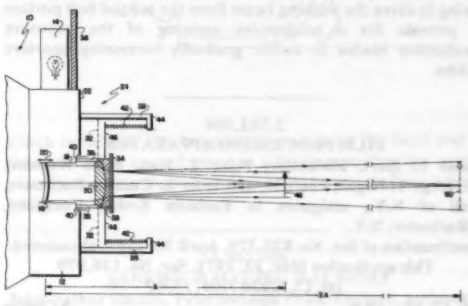
EXPOSURE COMPENSATION ARRANGEMENT FOR A VARIABLY FOCUSED POLARIZING SYSTEM

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 246,740

Int. Cl. G03b 3/02

U.S. Cl. 95—44 R **7 Claims**



A variable exposure compensation arrangement for use with a photographic camera incorporating a follow-focus exposure control system. The compensation arrangement is employed when the camera is used in conjunction with two linear polarizers for alleviating specular reflections. In order to compensate for the absorption of light within each polarizer, the compensation arrangement induces the follow-focus system to permit more light to enter the camera, thereby counterbalancing the decrease in light by the polarizers. The compensation arrangement includes a housing attached to the camera in an overlying relationship with the objective lens, and a movable lens means mounted within the housing.

3,762,299

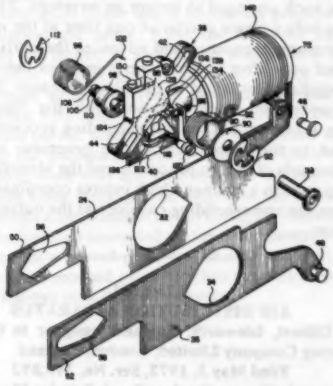
EXPOSURE CONTROL MECHANISM

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 21, 1972, Ser. No. 245,802

Int. Cl. G03b 9/14, 9/42

U.S. Cl. 95—56 **18 Claims**



A dual-bladed exposure control mechanism of a variety actuated through selective energization of a solenoid operating in conjunction with a walking beam-exposure mechanism blade combination. The mechanism includes an opening spring, normally biasing the walking beam to open the exposure mechanism blades, which is connected for co-rotation with a drum defining a first winding surface. This winding sur-

face is connected through a belt to the plunger of the noted solenoid. A second belt portion is connected from the first winding surface to a second winding surface formed upon the walking beam. Any tension in the latter belt occasioned from the opening spring bias is selectively negated upon energization of the solenoid and retraction of its internally disposed plunger. A closing spring connected with the walking beam serves to bias the beam and blades into a closed terminal position. De-energization of the solenoid permits the opening spring to drive the walking beam from the second belt portion to provide for a progressive opening of the exposure mechanism blades to define gradually increasing aperture widths.

3,762,300

FILM PROCESSING APPARATUS

James L. Hart, Rochester; Peter T. Kao, West Webster; George T. Negus, Penfield, and Peter E. Cumbo, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 820,379, April 30, 1969, abandoned.
This application Mar. 22, 1971, Ser. No. 126,979
Int. Cl. G03d *3/08, 13/00*
U.S. Cl. 95—89 R **8 Claims**

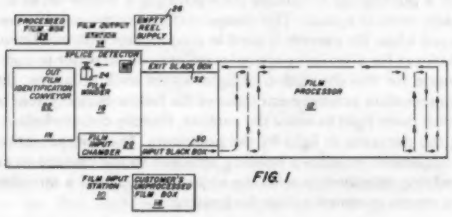


FIG. 1

Apparatus for continuously processing film strips wherein the individual lengths of film are spliced into a substantially continuous strip which is passed through a film processor. The individual lengths of film are identified by use of a film identification conveyor that operates substantially in parallel with the film processor to convey a film identification envelope, from the input end to the output end of the processor. The film identification conveyor has a plurality of movable carriers, each arranged to accept an envelope. The conveyor presents only a single carrier at one time at the input end of the processing apparatus, and advances the carrier from the input end only after an envelope is inserted therein and the corresponding film is fed to the film processor. The carriers are advanced in synchronization with the film processor whereby a carrier and the corresponding processed film are delivered to the output end of the processor substantially simultaneously. The film processor and the identification conveyor operate in a manner which insures coordinated delivery of film on the corresponding envelope at the output end of the processor.

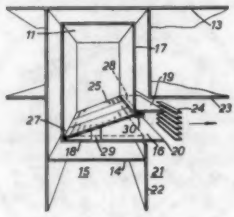
3,762,301

AIR DISTRIBUTION APPARATUS

Daniel Gilbert, Isleworth, England, assignor to Carrier Engineering Company Limited, London, England

Filed May 3, 1972, Ser. No. 249,892
Claims priority, application Great Britain, May 11, 1971, 14,305/71
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 C **14 Claims**

An air distribution duct has an elongated opening extending along the duct through which air may pass from the duct to an enclosure, together with a plurality of restriction members providing restricted air passages for controlling air flow from the duct to the opening, each having an inner edge located within the duct and the opposite outer edge located adjacent to and substantially parallel with the elongated opening, each restriction member being tiltable between a first position in which the said outer edge is positioned adjacent one side of the elongated opening and the restriction member extends



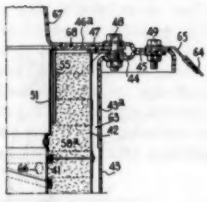
across the path between the interior of the duct and the said opening, and a second position in which the said outer edge is positioned adjacent the other side of the elongated opening thereby providing unobstructed passage between the interior of the duct and the said opening.

3,762,302

NON-POLLUTING CHIMNEY

Jacques Claude Michel Piot, 171, Rue Join-Lambert, 76 Bois-Guillaume, France

Filed Jan. 28, 1972, Ser. No. 221,630
Claims priority, application France, Jan. 28, 1971, 7103842
Int. Cl. E04h *12/28*
U.S. Cl. 98—58 **11 Claims**



A non-polluting chimney comprising a flue for the products to be discharged, a covering of heat-insulating material surrounding the flue and a casing of plastics material surrounding the covering.

A specific embodiment comprises superposed chimney sections whose outer casings have end flanges which are clamped together, the corresponding flue sections being suspended from the casings.

3,762,303

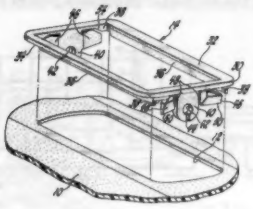
SNAP-IN COLLAR FOR AIR OUTLET ASSEMBLY

Donald E. Hoffman, West Seneca, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 10, 1971, Ser. No. 179,281
Int. Cl. F24f *13/00*
U.S. Cl. 98—114 **2 Claims**

A snap-in collar for mounting an air outlet grille assembly in an air duct is disclosed. In a preferred embodiment the collar has two sets of deflectable wing tabs mounted on opposite sides of the rear of the collar for snapping the collar into the

air duct during assembly. The leading edge of each wing tab is tapered to facilitate insertion into the duct and the trailing



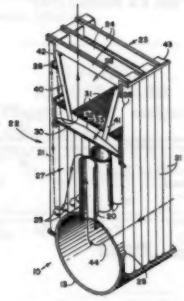
edge of each tab is tapered to provide for tight, rattle-free contact with the duct wall.

3,762,304

VALVE RESPONSIVE TO AIR BLAST PRESSURE OR THE LIKE

Robert O. Clark, 518 Camino de la Sierva N.E., Albuquerque, N. Mex.

Filed Oct. 26, 1971, Ser. No. 191,979
Int. Cl. F16k *7/17*
U.S. Cl. 98—119 **8 Claims**



An air flow valve responsive to air blast or shock wave pressure, including an air flow body divided into inlet and exhaust chambers by a deformable diaphragm. A plurality of parallel plates are spaced from the diaphragm onto which the diaphragm is deformed by the impacting shock wave. An enclosure is provided above the diaphragm extending to within the space between the parallel plates and diaphragm to receive air from the inlet chamber beneath the diaphragm through a plurality of interconnecting delay line tubes or plenums. Thus, air forced into the inlet chamber travels through the tubes into the enclosure, between the parallel plates to the space between the plates and the diaphragm, and then exhausted back through the parallel plates. Upon arrival of the shock wave, the diaphragm is deformed onto the plates and blocks the air path through the plates and, consequently, the exhaust chamber of the valve, before the arrival of the shock wave thereat.

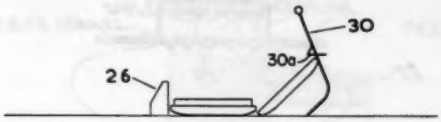
3,762,305

SANDWICH MAKING MACHINES

Charles Glackin, Glasgow, Scotland, assignor to United Biscuits Limited, Isleworth, Middlesex, England

Filed July 13, 1971, Ser. No. 162,062
Int. Cl. A21c *15/02, 9/06*
U.S. Cl. 99—450.4 **3 Claims**

Sandwich making machines in which baked dough pieces are conveyed continuously by spaced pusher fingers past a coating station which coats alternate pieces; past an automatic gate which removes each uncoated biscuit from its pusher finger so that the succeeding coated biscuit then pushes the uncoated biscuit along in front of it; and past a swingable hook



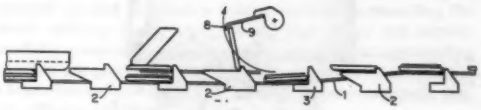
which turns over the uncoated pieces about the front end of the succeeding coated piece as a fulcrum so that the coated piece drops onto the succeeding coated piece to form a sandwich.

3,762,306

SANDWICH MAKING MACHINES

John Arthur Staples, Peterborough Pe28, England, assignor to United Biscuits, Limited, Isleworth, Middlesex, England

Filed July 26, 1971, Ser. No. 165,970
Int. Cl. A21c *15/02*
U.S. Cl. 99—450.4 **4 Claims**



Successive pieces of baked dough are moved along a main static conveyor surface by fingers projecting upward through a longitudinal slot in the surface. The fingers are connected to and moved by an endless chain. They consist of two types alternately positioned along the chain. One type is used for the coated pieces and has a long upwardly projecting finger. The other type is used for the uncoated pieces and is characterized by a relatively short finger and a horizontal projection sufficient to support the piece. After the alternate pieces are coated, they are moved to a station at which there is a short static conveyor surface above the main surface. Here the chain and main surface approach each other so that the fingers are raised with respect to the main surface. The coated pieces remain on the main surface and pass below the upper surface, but the uncoated pieces are raised to the level of the upper surface. Here they are inverted onto the upper surface by a swinging hook inverter. The fingers of the coated pieces project through a longitudinal slot in the upper surface so as to advance the inverted uncoated pieces coincidentally with the advancement of a coated piece on the main surface; whereupon, when the uncoated piece reaches the end of the upper conveyor, it drops onto the coated piece.

3,762,307

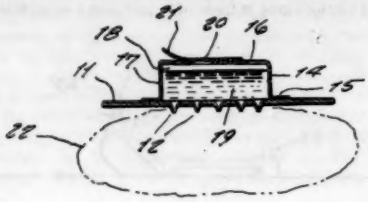
FLAVOR CUP

Peter Badovinac, 4069 Dilly Ave., Cleveland, Ohio

Filed Mar. 2, 1972, Ser. No. 231,193
Int. Cl. A23b *1/16*; A47j *43/16*
U.S. Cl. 99—532 **1 Claim**

A device for impregnating a meat with liquid flavoring or other fluid so to improve its taste, the device consisting of a container having a series of downward projections on its un-

derside, each projection being hollow and communicating with the interior of the container, the outer end of the projec-

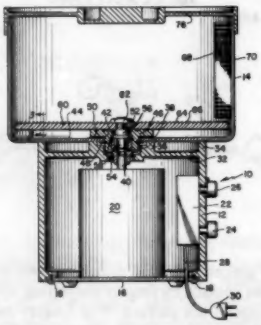


tions being open so that the flavoring or fluid can be dispensed from the projections after they pierce into the meat.

3,762,308
POTATO PEELER

David H. Greene; Elizabeth L. Greene, both of 45 Shornecliffe Rd., Newton, and Robert J. Madzar, 24 Grove St., Natick, all of Mass.

Filed Sept. 30, 1971, Ser. No. 185,170
Int. Cl. A23n 7/02
U.S. Cl. 99—632 **4 Claims**



A potato peeler having a base containing a motor and a container having a rotating abrading disc driven by the motor. A deflector extends above the disc from the side of the container and has an abrading surface. The abrading surface of the disc and deflector are defined by pyramidal teeth.

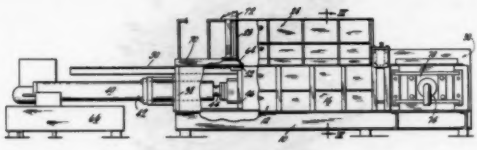
This invention relates to potato peelers and more particularly comprises an electrically driven potato peeler designed for home use.

3,762,309
METHOD OF COMPRESSING PAPER PRODUCTS

Colin S. Wright, Fort Lauderdale, Fla.; Robert E. Fogelsong, Ann Arbor, Mich.; Jerold W. Johnson, and Teja S. Jouhal, both of Cordele, Ga., assignors to American Hoist & Derrick Company, St. Paul, Minn.

Division of Ser. No. 30,837, April 22, 1970, Pat. No. 3,613,556. This application Feb. 8, 1971, Ser. No. 113,746
Int. Cl. B65b 13/02
U.S. Cl. 100—3 **2 Claims**

A horizontal baler for baling paper products incorporating a horizontally disposed gathering and compression chamber having an open upper portion communicating with a hopper wherein the paper to be compressed is directly introduced into the hopper and a gatherer and compression ram transfers the paper into a compression chamber to form a parcel of layered compressed material. The paper may be continuously introduced into the hopper as the gatherer ram cycles and a cover plate on the ram receives the paper when the ram is extended, wiping the paper from the cover plate as the ram retracts. Cycling of the gatherer ram continues until a parcel of predetermined compression is achieved, whereupon an ejector or transfer ram perpendicularly disposed to the gatherer ram intermittently transfers the compressed parcel in the direction of the formed compressed parcel layers through

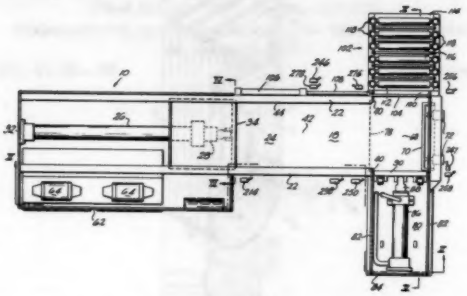


automatic strapping apparatus which straps the parcel in a direction perpendicular to the formed layers to define a bale. Gathering, compressing and transferring occurs at substantially the same horizontal orientation, and automatic control means are utilized to permit automatic operation of the apparatus cycle.

3,762,310
METHOD OF BALING

Colin S. Wright, Ann Arbor, Mich., assignor to American Hoist & Derrick Company, St. Paul, Minn.

Division of Ser. No. 876,214, Dec. 1, 1969, which is a continuation of Ser. No. 661,070, Aug. 16, 1967, abandoned. This application Jan. 20, 1971, Ser. No. 107,905
Int. Cl. B65b 13/02
U.S. Cl. 100—3 **2 Claims**



A large-capacity baling apparatus having a horizontally disposed compression chamber directly loadable at its upper portion and including transversely moveable means for shifting the compressed medium from the compression chamber into a strapping chamber wherein compression and strapping occur in nonaligned, separate chambers.

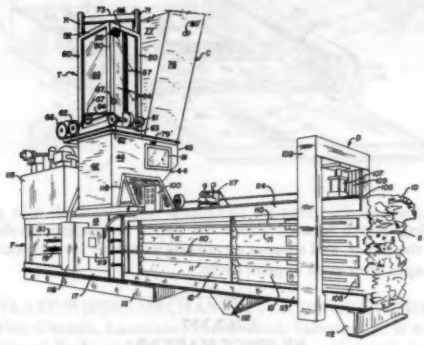
3,762,311
TAMPER FOR BALER

Hyman Friedman, Denver, Colo., and Melvin C. Michael, 8275 Eaton Way, Arvada, Colo., assignors to Said Friedman, by said Michael

Filed May 17, 1971, Ser. No. 143,883
Int. Cl. B30b 7/04
U.S. Cl. 100—49 **8 Claims**

A tamper for a baler, as for waste paper, which includes a plunger movable downwardly into an auxiliary compression space above the compression space for the baler forwardly of the platen. The feed chute extends to the top of a feeding space at one side of the auxiliary space, the feeding space having an inclined side, so that the baler may be operated either with or without the tamper. Controls for the tamper and baler include limit switches and maintain the plunger in down position until the baler platen has moved forwardly part way, to increase the shearing effect of the top edge of the platen and

decrease the material shoved back up into the auxiliary compression space. A safety device for the tamper plunger includes a cable connected to a cross bar, the upper ends of which rest on compression springs at the top of the tamper, so that the maximum downward movement of the tamper



plunger will be slightly above the upper edge of the path of movement of the baler platen. The safety device is particularly effective if the tamper plunger should be moved downwardly, as by manual control, when there is little or no paper in the auxiliary compression space.

3,762,312

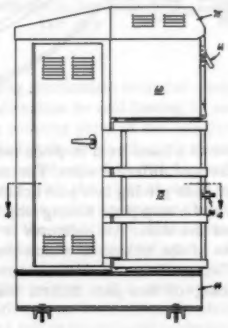
REFUSE BALER

Jay R. Guhl, San Leandro, Calif., assignor to Dean Park, San Leandro, Calif., a part interest

Filed Dec. 6, 1971, Ser. No. 204,888

Int. Cl. B30b *1/18*

U.S. Cl. 100—52 **14 Claims**



A refuse baler for solid waste material normally having an upright configuration with a vertically elongated support; an open top baling chamber; a compressor member mounted on the support for vertical reciprocation into the chamber; and power driven means, including a motor driven screw journaled at its upper end in the support, and having a threaded drive to the compressor member whereby the power driving structure is positioned compactly within the vertical confines of the support with the aforementioned screw acting in compression during the compression stroke of the compressor member. The baler also has controls for automatically determining and providing uniform bale size and compaction.

3,762,313

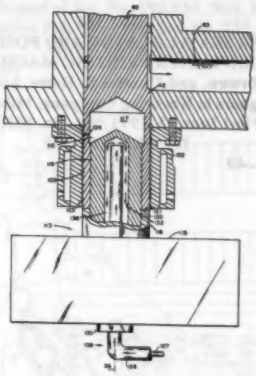
EXTRUDING PLASTIC

Charles M. Schott, Jr., Gloucester, Mass., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.

Division of Ser. No. 806,861, March 13, 1969, Pat. No. 3,645,659. This application June 28, 1971, Ser. No. 157,695

Int. Cl. B29f *3/02*; B02c *11/08*

U.S. Cl. 100—92 **7 Claims**



An extruder is shown having vertical arrangement of the extruder; a drive shank at the outlet end isolated by an internal air chamber from the heated extruder; the shank cooled by an inserted cooling member; a sealing member surrounding the shank defining a restricted passage that tapers and accommodates eccentricity; the stationary walls of the surrounding member are grooved, resisting outward leakage of the plastic. These various features are shown to achieve a compact, simple, efficient machine.

3,762,314

APPARATUS FOR DRYING LIQUID-IMPREGNATED FIBROUS OR SPONGY MATERIALS, ESPECIALLY SUGAR-CANE BAGASSE

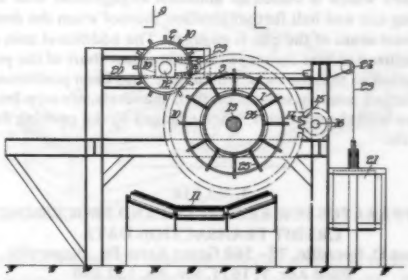
Marcel Jean Charles Barre, Faches-Thumesnil, France, assignor to Societe Sucriere De L'Atlantique (Engineering), Paris, France

Filed Dec. 2, 1970, Ser. No. 94,345

Claims priority, application France, Dec. 5, 1969, 6942223

Int. Cl. B30b *9/20*

U.S. Cl. 100—121 **4 Claims**



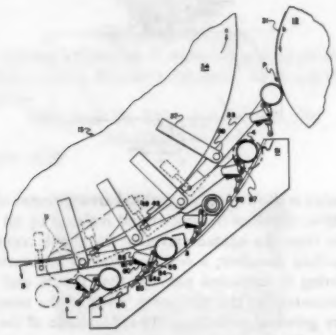
Fibrous material is passed between a perforated cylinder and a pressing cylinder, the first being provided with means adapted to collect expressed liquid and to remove it preferably from at least one of the ends of the cylinder. The perforated cylinder is of larger diameter and the pressing cylinder is subject to the action of an adjustable pressing means, and is arranged above the perforated cylinder and laterally of the latter. The shaft of the pressing cylinder is displacable in slides

and subject to an action tending to bring it towards the perforated cylinder.

ERRATUM

For Class 100—215 see:
Patent No. 3,762,321

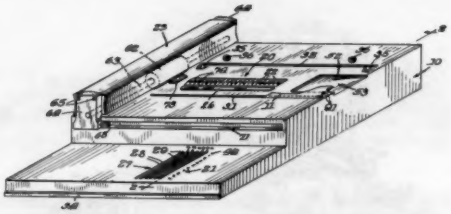
3,762,315
CONTAINER SEAM LOCATOR AND POSITIONER FOR CONTAINER PRINTING MACHINE
Gaylord W. Brown, and Charles E. Howe, both of Beaverton, Mich., assignors to Kochring Company, Milwaukee, Wis.
Filed June 23, 1971, Ser. No. 155,726
Int. Cl. B41f *17/22*
U.S. Cl. 101—40 **13 Claims**



Mechanism for locating the seams where the terminal ends of containers such as steel cans are joined together in high-speed printing or decorating apparatus wherein a rotary mandrel drum must present the containers individually to offset printing blankets on a rotary printing drum in the same relative rotational position so that the seam of the can is never printed. The rotary mandrel has a series of circumferentially spaced mandrel lever assemblies with generally tangentially disposed laterally projecting mandrels thereon, mounted in line with printing blankets on the peripheral face of the rotary printing drum. The mandrel lever assemblies are provided with cam follower mechanism for engaging cam surfaces just upstream of the printing station which function to normally revolve the cans on the mandrels, and a can-engaging stop is provided which is biased to maintain engagement with each rotating can and halt further rotation thereof when the double thickness seam of the can is engaged. The additional cam surface utilized to bias the stops terminates just short of the printing station so that the cans, which have thus been positioned in preselected rotary positions on their mandrels, are now free to revolve with the mandrels, when engaged by the printing drum blankets.

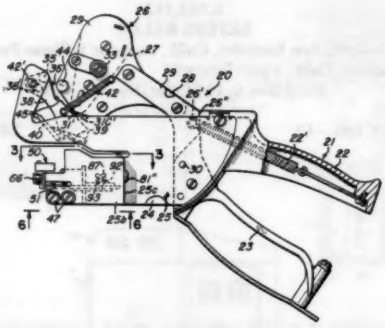
3,762,316
APPARATUS FOR RECORDING AND PROCESSING CREDIT TRANSACTION DATA
Erdman O. Spradlin, 7S - 360 Green Acres Dr., Naperville, Ill.
Filed Apr. 7, 1971, Ser. No. 132,050
Int. Cl. B41f *3/04*
U.S. Cl. 101—45 **16 Claims**

A portable data recording apparatus for imprinting log sheets or continuous rolls of data paper with fixed data from embossed credit cards and both fixed and variable data from settable print wheels is provided for use in a unique and highly efficient method for credit transaction processing, accounting and billing. The recording apparatus is provided with a housing used to support a roll of data paper, a printing assembly including rotatable print wheels mounted in the housing and located below the paper for selecting fixed and variable data to be imprinted, a positioning assembly for setting the position of printing elements on the printing wheels, a movable im-



printing device located above the paper for imprinting data onto the paper, and a paper advancing assembly for advancing the paper after each imprint cycle.

3,762,317
RE-PRICE MARKER
Paul H. Hamisch, Sr., Dayton, Ohio, assignor to The Monarch Marking System Company, Dayton, Ohio
Filed Aug. 4, 1971, Ser. No. 169,017
Int. Cl. B41k *3/04*
U.S. Cl. 101—68 **11 Claims**

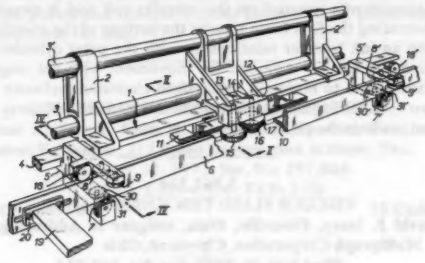


There is disclosed a hand-held re-price marker for re-pricing two-part tickets of different sizes. The marker includes a ticket slide useful in re-pricing two-part tickets having side-by-side ticket parts and a stop plate having stop faces for limiting the movement of the slide. An indicator is provided for indicating the sizes of the tickets to which the stop faces correspond. Also, first and second ticket stops are provided to facilitate re-pricing of two-part tickets having end-to-end ticket parts.

3,762,318
SCREEN PRINTER WITH VARIABLE FRAME STROKE
Louis Gilbert Dubuit, 60 rue Vitruve, Paris, France
Filed Aug. 23, 1971, Ser. No. 173,963
Claims priority, application France, Sept. 9, 1970, 7032714
Int. Cl. B41f *15/08*
U.S. Cl. 101—124 **6 Claims**

A device enabling the preset carriage stroke of a silk-screen printing machine to effect the resultant stroke of the screen support frame according to any desired ratio. Transmission gear means effect this desired resultant stroke and comprise gear racks mounted on the carriage and a carrier bar for the screen support frame and three gear wheels mounted on two

spindles on a fixed support, the single gear wheel meshing with the gear rack on the carriage, the other two gear wheels mesh-



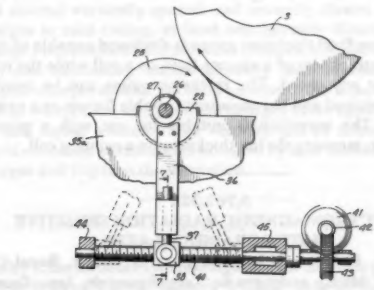
ing with the single gear wheel and the gear rack on the carrier bar respectively.

3,762,319

PLATE WIPING MECHANISM FOR INTAGLIO PRESS

Valdo Gazzola, Lausanne, Switzerland; Salvatore F. D'Amato, Floral Park, and Chauncey P. Foote, Jr., Katonah, both of N.Y., assignors to American Bank Note Company, New York, N.Y.

Filed Aug. 20, 1971, Ser. No. 173,555
Int. Cl. B41f *9/10, 9/16*
U.S. Cl. 101—155 **6 Claims**



The plate wiping mechanism includes a wiping roll running in the opposite direction to and having its surface in rubbing contact with the printing plate of the intaglio press. The wiping roll is journaled in the sides of a tank containing an ink solvent, so that the periphery of the wiping roll moves from its position of contact with the plate through a bath of ink solvent, and then moves again to engage the plate. The wiping roll is driven from the main drive of the press through a control system by which the rotational speed of the wiping roll may be set as an adjustable proportion of the speed of the printing plate. The wiping roll is also arranged for endwise reciprocation with respect to the intaglio plate. The motor for driving the wiping roll in its endwise reciprocation is also controlled at a speed adjustably proportional to the speed of the intaglio plate.

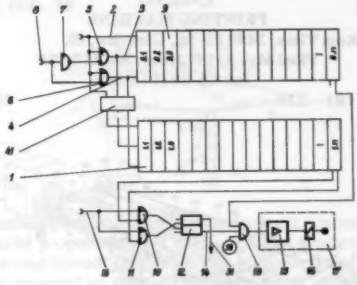
The wiping roll is fixed on a shaft whose opposite ends are individually adjustable by means of eccentrics to vary the pressure between the wiping roll and the intaglio plate. These eccentrics are rotatably mounted in the walls of the solvent tank. The joints in which the wiping roll shaft turns are constructed to accommodate rotation, endwise reciprocation, and eccentric adjustment of the shaft position. Furthermore, the driving connections by which the shaft is rotated and by which it is reciprocated are constructed to accommodate withdrawal of the solvent tank and the wiping roll as a unit from its operating position where the roll contacts the plate to a retracted position where the roll is separated from the plate.

3,762,320

ARRANGEMENT FOR CONTROLLING THE STACKING OF PRINTED SHEETS IN MULTIPLE COLOR ROTARY PRINTING MACHINES

Albrecht Johne; Karl-Heinz Forster, both of Dresden, and Klaus Schanze, Radebeul, all of Germany, assignors to VEB Polygraph Leipzig, Kombinat Fur Polygraphische Maschinen Und Ausrustungen, Leipzig, Germany

Continuation-in-part of Ser. No. 196,955, Nov. 9, 1971. This application Feb. 10, 1972, Ser. No. 225,175
Int. Cl. B65h *31/24*
U.S. Cl. 101—183 **16 Claims**



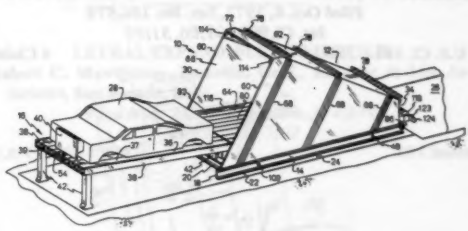
An arrangement in multiple color rotary printing machines for controlling the stacking of sheets so that they are stacked on either of one of two stacks. One stack is designated for normally processed sheets, and the other stack is designated for those sheets different from the normally processed ones. A shift register is actuated with shifting pulses from a pulse generator, and receives a signal from a sheet examining station in one stage of the register. A memory circuit is connected to this one stage of the register. The output of the memory circuit actuates, through an amplifier, a stacking mechanism so that the distribution of printed sheets is controlled between the two stacks.

3,762,321

SCRAP CRUSHER WITH LOADING MEANS

George C. Patros, La Crosse, Wis., assignor to Kar-Denser, Inc., La Crosse, Wis.

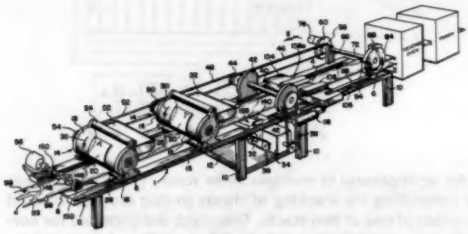
Filed Feb. 17, 1972, Ser. No. 227,494
Int. Cl. B30b
U.S. Cl. 100—215 **4 Claims**



A scrap crusher for crushing irregular masses of scrap, such as stripped automobile bodies, into regularly shaped rectilinear slabs comprises a pair of spaced apart walls, a stationary inclined compression gate located between the walls, and a pivotably movable hydraulic ram operated inclined compression gate also between the walls. The gates and walls cooperate to define a compression chamber having an upper scrap receiving opening and a lower slab discharging opening. The crusher further comprises an inclined stationary platform adjacent the scrap receiving opening and aligned with the movable compression gate when the latter is in fully open position. A movable hydraulic ram operated loading member

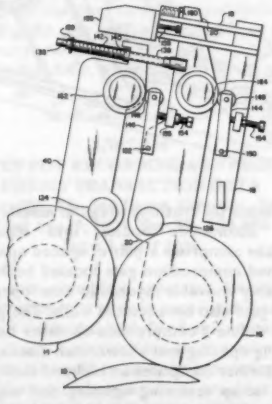
located on the platform is movable from an extended position toward a retracted position wherein it forces scrap on the platform into the chamber. The scrap is crushed into a slab in the chamber by closing movement of the movable compression gate. Opening movement of the latter gate allows the slab to be slid out of the press through the lower opening by the action of the loading member as it pushes the next load of scrap into the chamber. A motor driven slab ejector drum adjacent the lower opening assists in removal of the slab. The interior of the compression chamber is shaped to prevent scrap from being jammed therein.

3,762,322
PRINTING MACHINE
George Ross Vines, 2459 Fir St., Glenview, Ill.
Filed May 4, 1972, Ser. No. 250,180
Int. Cl. B41f *13/04*
U.S. Cl. 101—228 **10 Claims**



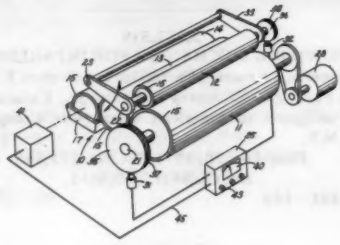
A machine for imprinting on a strip or sheet comprises multiple printing cylinders in tandem and revolving continuously at the same speeds for imprinting successive impressions on the strip. The strip is intermittently fed at a linear speed that is the same as the peripheral speed of the impression surfaces of the printing plates on the printing cylinders. The mechanism for intermittent feed comprises a carrier having spring fingers that engage notches at the sides of the strip to feed the strip a predetermined amount after which the carrier is returned to an initial or starting position for again feeding the strip.

3,762,323
FLEXOGRAPHIC PRINTING SYSTEM
Theodore J. Hartka, Phoenix, and William C. Staley, Ruxton, both of Md., assignors to Wm. C. Staley Machinery Corp., Hunt Valley, Md.
Filed Oct. 6, 1971, Ser. No. 186,978
Int. Cl. B41f *31/06, 31/36*
U.S. Cl. 101—350 **4 Claims**



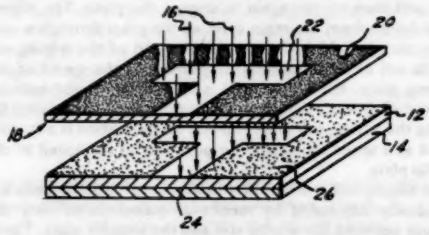
A wipe roll and an engraved ink transfer roll of a flexographic printing assembly are suspended from a frame to permit movement of the axis of the wipe roll and the ink transfer roll with respect to the axis of the print cylinder. A first force is continuously applied to the transfer roll. A second force is intermittently exerted on the transfer roll and is capable of overriding the first force to urge the surface of the transfer roll into an ink transfer relationship with the print cylinder. The wipe roll can be mounted for movement with the engraved transfer roll to maintain the desired clearance between these two rolls during the movement of the transfer roll away from and towards the print cylinder.

3,762,324
VISCOUS FLUID THICKNESS GAUGE
David J. Ivary, Pinesville, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed July 29, 1971, Ser. No. 167,336
Int. Cl. B41f *31/30, 33/10, 33/14*
U.S. Cl. 101—350 **1 Claim**



A viscous fluid thickness gauge is disclosed capable of measuring the thickness of a viscous fluid on a roll while the roll is rotating at any speed. The thickness gauge can be continuously monitored and has an output capable for use as a control function. The invention is suitable for use with a printing machine to measure the ink thickness on a printing roll.

3,762,325
ELECTROMAGNETIC RADIATION SENSITIVE LITHOGRAPHIC PLATES
Robert W. Hallman, Utica, and Gary W. Kurtz, Royal Oak, both of Mich., assignors to Teeg Research, Inc., Detroit, Mich.
Continuation of Ser. No. 756,709, Aug. 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 685,923, Nov. 27, 1967, abandoned. This application May 11, 1970, Ser. No. 36,453
Int. Cl. B41n *1/00, 3/00*
U.S. Cl. 101—453 **3 Claims**



Electromagnetic radiation sensitive elements made of a layer of electromagnetic radiation sensitive material disposed on a support backing or substrate. The electromagnetic radiation sensitive material comprises essentially a substrate provided with a coating of a mixture or compound of inorganic elements which, after selective and discrete exposure to electromagnetic actinic radiation, is provided with selective and discrete surface area portions having chemical and physical

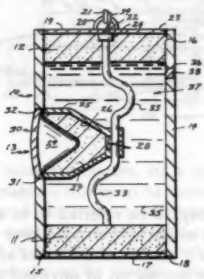
characteristics substantially modified as a result of exposure to such electromagnetic radiation. The radiation sensitive elements of the invention have particular usefulness as resist materials and for making lithographic plates, photomasks, letterpress plates and diverse articles fabricated by photoresist processes and the like.

3,762,326

CONTROLLED DIRECTIONAL CHARGES

Thomas A. Edgell, 5900 N. Braeswood, Houston, Tex., and Robert K. Reagor, 217 Paseo Encinal, San Antonio, Tex.

Filed Nov. 11, 1971, Ser. No. 197,868
Int. Cl. E21b *43/26*; F42b *3/08*
U.S. Cl. 102—20 **10 Claims**



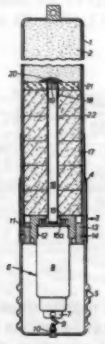
A controlled directional charge comprising a casing, first and second vertically spaced and inwardly directed pancake charges in said casing, at least one laterally directed shaped charge intermediate said pancake charges, a liquid in said casing, and detonating means whereby said laterally directed shaped charges at least partially penetrate the adjacent formation at which time said pancake charges exert opposing forces on said liquid whereby high velocity jets or streams of said liquid enter the perforations initiated by said laterally directed charges and fracture the formation.

3,762,327

PYROTECHNIC DEVICES

Dudley Charles Murray, Homington, near Salisbury, and Gordon Wilfred Curtis, Bulford Village, both of England, assignors to Pains-Wessex Limited, Wiltshire, England

Filed May 4, 1970, Ser. No. 34,306
U.S. Cl. 102—37.8 **10 Claims**



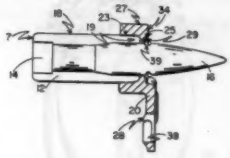
A signal device operable under water and released to rise to and burn at the surface, has a casing open at one end, signal composition therein, igniting means therefor, and plug means for inhibiting passage under water between the open end and the signal composition which permits the escape of combustion products when the device is initially lighted but which is expelled or consumed when the combustion gases are generated at a higher rate. A fuse imparts delay between operation of the igniting means and ignition of the signal composition.

3,762,328

CASELESS AMMUNITION AND GUN THEREFOR

John Gonsalves Rocha, Westfield, Mass., assignor to Maremont Corporation, Chicago, Ill.

Division of Ser. No. 791,308, Jan. 15, 1969, Pat. No. 3,626,620. This application Sept. 29, 1971, Ser. No. 184,856
Int. Cl. F42b *5/18*
U.S. Cl. 102—38 **5 Claims**



A caseless small arms cartridge including a generally cylindrical solid propellant body having a bullet projecting from the front end thereof with an organic plastic seal ring and link element mounted on the bullet with the bullet projecting forwardly therebeyond. The seal ring has an outer surface of a diameter greater than that of the solid propellant body for providing a seal with a surrounding firing chamber and has an arm portion extending radially outward beyond the ring with a bore for receiving either the bullet of a second like cartridge for assembling a plurality of cartridges to provide a belt thereof or for engaging the loading plunger of the gun breech.

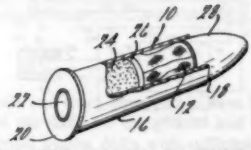
The gun for firing such caseless cartridges comprises a receiver element, a barrel mounted therein, a novel floating firing chamber element mounted in the receiver element for limited movement between a loading position away from and a firing position toward the barrel, and firing means for moving the floating firing chamber element to its firing position. The novel floating firing chamber has an enclosed bottom with abutment means thereon for contacting the primer of the cartridge and an open forward end adjacent the barrel for receiving the cartridge body within the chamber with the bullet within the barrel when the floating firing chamber is in its loaded position. The firing means moves the firing chamber to its firing position to drive the abutment means into contact with the primer to fire the cartridge.

3,762,329

LETHAL EXPANDIBLE PROJECTILE

Robert C. Mawhinney, Danville, Calif., assignor to MB Associates, San Ramon, Calif.

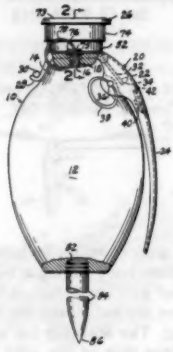
Filed Aug. 19, 1971, Ser. No. 173,079
Int. Cl. F42b *7/02*
U.S. Cl. 102—42 C **15 Claims**



A high penetration, short range projectile comprised of a shot filled, deformable, flexible bag which is initially folded or rolled for insertion in a conventional cartridge case of a small firearm or the like, and adapted to be launched therefrom. Upon exit from the muzzle of the small arm, the bag radially expands under the influence of centrifugal force provided by

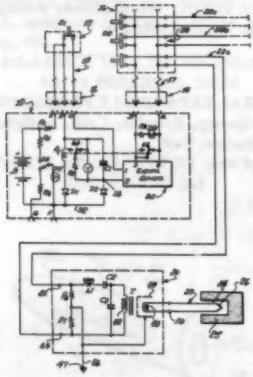
the rifling grooves within the barrel to provide a spin stabilized trajectory characterized by a substantial energy decay in a relatively short, preselected down range distance.

3,762,330
GRENADE FUSE LEVER
Joshua D. Hall, Boiling Spring Lakes, N.C.
Filed May 9, 1972, Ser. No. 251,755
Int. Cl. F42b *27/00, 23/28*
U.S. Cl. 102—64 6 Claims



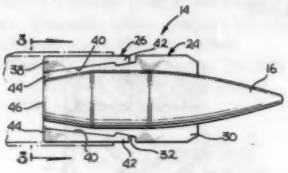
A hand grenade having an explosive filled projectile body is provided with a handle spring urged away from the body by a spring urged firing pin with the handle normally retained on the body by a safety pin. The handle is provided with a head portion containing a pressure sensitive firing or striker pin normally rendered inoperative by a safety bar.

3,762,331
FIRING CIRCUIT FOR BLASTING CAPS
Petro Vlahos, Tarzana, Calif., assignor to The Association of Motion Picture and Television Producers Inc., Hollywood, Calif.
Filed Mar. 29, 1972, Ser. No. 239,268
Int. Cl. F42c *11/00, 19/12, 15/40*
U.S. Cl. 102—70.2 R 9 Claims



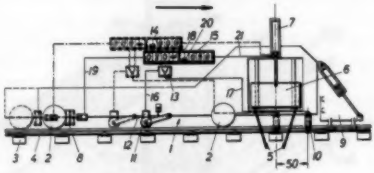
The present system for selectively firing explosive charges utilizes as firing a signal an alternating current having a frequency of the order of 10 kHz and a voltage of at least 60 volts, which is transmitted by cable to the explosive site. A discriminating circuit adjacent each firing squib includes a step-down transformer with saturable core which effectively blocks spurious 60 cycle alternating current voltages. Series and shunt capacitances further insure against spurious signals and tune the circuit to enhance response to the firing signal. Convenient testing and monitoring circuits are described.

3,762,332
PROJECTILE SABOT
Linton S. Witherspoon, 7216 Butte Dr., Goleta, and Robert H. Dunlap, 6165 Second Ave., Sacramento, both of Calif.
Filed July 8, 1971, Ser. No. 160,604
Int. Cl. F42b *13/16*
U.S. Cl. 102—94 10 Claims



A sleeve assembly, to be referred to as a sabot, is to surround a projectile within an oversized bore of the barrel of a firearm. The sabot is formed of a first set and a second set of half shells with the second set to surround the first set in the aft section of the projectile, both sets to be discarded after the projectile leaves the bore. The material of construction of the first set is to have characteristics of high strength and substantially no elasticity. The material of construction of the second set is to have characteristics of high strength and relative elasticity. The aft surface area of the second set is to comprise approximately 50 percent of the total aft surface area.

3,762,333
MOBILE TRACK WORKING MACHINE
Josef Theurer, Vienna; Wilhelm Praschl, Linz-Urfahr, and Gernot Bock, Aschach/Donau, all of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft M.B.H., Vienna, Austria
Filed Dec. 10, 1970, Ser. No. 96,708
Claims priority, application Austria, Dec. 19, 1969, 11912; Aug. 28, 1970, 7868
Int. Cl. E01b *27/16, 37/00*
U.S. Cl. 104—12 20 Claims

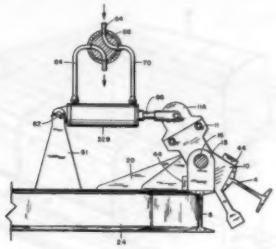


The advancement of a mobile track working machine from operating station to operating station is accurately controlled by the combined use of a control element actuatable by a selected track part, such as a tie spike or bolt, a signal pulse generator operatively associated with the control element and producing signal pulses indicating the distance of the advancement, and a signal pulse recording instrument connected to the generator and receiving the signal pulses therefrom upon actuation of the control element by the selected track part.

3,762,334
SWITCHING MECHANISM FOR MONORAIL CONVEYORS

Walter F. Larson, P.O. Box 1967, Plainview, Tex.

Division of Ser. No. 873,302, Nov. 3, 1969. This application Aug. 9, 1971, Ser. No. 170,012
Int. Cl. E01b *25/26*
U.S. Cl. 104—101 5 Claims

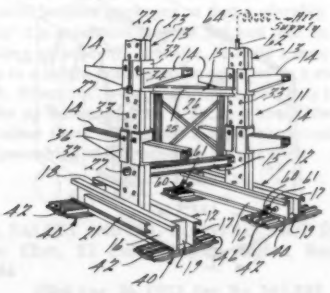


A switch for a monorail system, such as used in factories and the like, to enable a trolley to be moved along the main line of the monorail conveyor or diverted onto a spur or branch track by a switch that is remotely actuated. The switch is so constructed that, when it is moved into place either manually, mechanically or by electric power means, it will remain in this position until it is intentionally moved to another position. The switching mechanism is so constructed that the manual, mechanical or electrically actuated systems may be changed by interchanging the switch actuating element only. When the switch is moved into one position, blockage of the open portion of the switch is provided to prevent trolleys from moving off the ends of the rails of the monorail conveyor system. Provision is made to actuate the system manually to direct a weight over center to hold thd switch in a given position, or to actuate the switch mechanism by fluid pressure, which may be either hydraulic or air pressure. Still further provision is made to actuate the switch by electrically actuated mechanism, such as a solenoid.

3,762,335
HIGH DENSITY MOBILE STORAGE SYSTEM

Edward A. Baker, Jr., Birmingham, and Rowland A. Fabb, Troy, both of Mich., assignors to Palmer-Shile Company, Detroit, Mich.

Continuation of Ser. No. 35,159, May 6, 1970, abandoned. This application Feb. 16, 1972, Ser. No. 226,569
Int. Cl. A47b *53/02*
U.S. Cl. 104—173 3 Claims

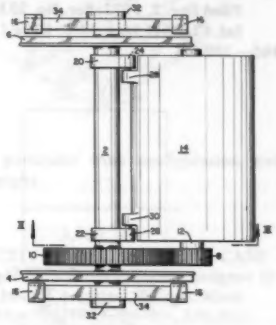


A high density mobile storage system in which groups of load bearing storage devices such as racks and shelves are provided with selectively energized air bearings which provide a lubricating film of air between a supporting warehouse or like floor and the bearings whereby to reduce the coefficient of friction between the bearings and the floor and permit movement of the storage devices, either singly or in groups from place to place along preferably guided paths with little expenditure of power, either manual or automatic.

3,762,336
RAILWAY TRANSMISSION

John Henry Gooch, Goldsmiths Albourne, Hassocks, England

Filed Dec. 2, 1971, Ser. No. 204,029
Claims priority, application Great Britain, Dec. 9, 1970, 58,456/70
Int. Cl. B61c *9/48*; F16d *3/58*; F16h *1/06*
U.S. Cl. 105—136 7 Claims

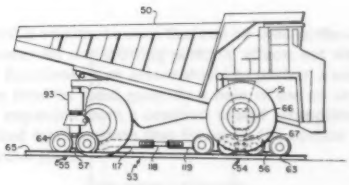


The transmission relates to railway vehicles embodying electric traction in which an electric motor drives an axle of the vehicle through spur gearing the motor being mounted to one side of said axle and movable relative thereto, guide means being provided for maintaining parallelism between the motor shaft and the axle and consists in providing in said guide means at least one link pivotally connected to said motor on an axis parallel to the axis of said drive shaft and motor.

3,762,337
RAILED VEHICLE-CARRIER SYSTEM

John Francis McKeon; Danforth Kingsbury Heiple, and Louis Eugene Carr, all of Peoria, Ill., assignors to Westinghouse Air Brake Company, Peoria, Ill.

Filed July 19, 1971, Ser. No. 163,692
Int. Cl. B61d *15/00*; B62d *61/12*; F16c *17/08*
U.S. Cl. 105—159 11 Claims



A railroad dolly and truck equipped to have its front wheels supported upon the dolly off the ground and its rear wheels partially supported by the dolly with sufficient contact with the ground to power and brake the dolly. The truck is equipped with a hydraulic lift suspended from the front undercarriage and a similar lift suspended from the rear undercarriage. The lift has a wegde-shaped member mounted at the free end of the lift. The dolly includes a front dolly section and a rear dolly section. The sections are flexibly linked to each other and have railroad wheels adapted to ride conventional rails. Each section has a trough mounted on its frame.

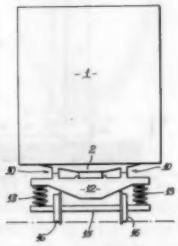
The trough is vee-shaped and mates with the lift wedge. The front lift centers within the front dolly trough and raises the truck tires off the ground. The rear lift centers within the rear dolly trough and raises the truck partially or completely off the ground. The truck is equipped with signalling devices to fix its proper location over the dolly before mounting the dolly in a hydraulic system to supply the power to the lift necessary to raise the truck. Hooks are provided underneath the truck to grip the dolly during transportation between rail locations. Each dolly has its own braking system.

3,762,338

RAILWAY TRUCK ANTI-ROCK SIDE BEARING DEVICE

Howard Irving Dwyer, Jr., Glen Ellyn, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Dec. 2, 1971, Ser. No. 203,969
Int. Cl. B61f 5/14, 5/16; F16c 17/04
U.S. Cl. 105—199 CB 10 Claims



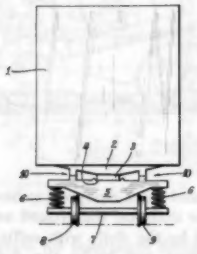
A railway truck anti-rock device incorporating a base extending outwardly and downwardly beyond the truck bolster to provide support for upstanding elastomericly biased snubbers which in turn support a bridge. A rocking railway car engages the bridge which in turn engages the snubbers up to a point beyond which the bridge engages the base.

3,762,339

RAILWAY TRUCK ANTI-ROCK SIDE BEARING DEVICE

Howard Irving Dwyer, Glen Ellyn, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Continuation-in-part of Ser. No. 203,969, Dec. 2, 1971. This application Jan. 31, 1972, Ser. No. 222,132
Int. Cl. B61f 5/14, 5/16; F16c 17/04
U.S. Cl. 105—199 CB 2 Claims



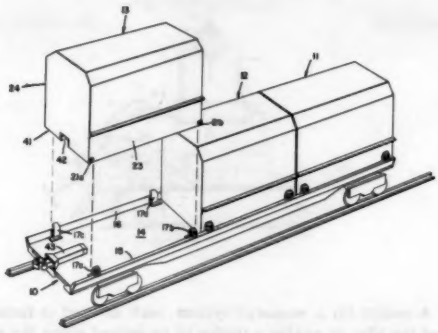
An anti-rock railway truck incorporating a truck bolster providing recessed support for upstanding elastomerily biased snubbers which in turn support a bridge. A rocking railway car engages the bridge which engages the snubbers up to a point beyond which the bridge engages the bolster.

3,762,340

CONTAINER RESTRAINT SYSTEM FOR RAILWAY CARS

Nicholas N. Udaloff, San Francisco, Calif., assignor to Southern Pacific Transportation Company, San Francisco, Calif.

Filed Feb. 10, 1972, Ser. No. 225,258
Int. Cl. B65j 1/22; B60p 7/08
U.S. Cl. 105—366 D 4 Claims



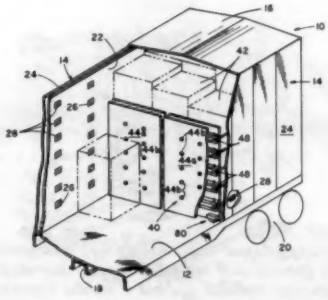
A system for restraining movement of containers loaded on flat-bed rail cars. The rail car has a set of four permanently and rigidly mounted restraint members for each container, two each of the restraint members being on opposite sides of the car, and each having vertical inner surfaces facing the centerline of the car and vertical side surfaces facing lengthwise of the car, which vertical extend upwardly a substantial distance above the bed of the car. the container has vertical sides held by the vertical inner surfaces of the restraint members to positively restrain lateral movement of the containers on the car; the container has outwardly projecting lugs with vertical surfaces held by the vertical side surfaces of the restraint member to positively restrain longitudinal movement of the containers on the car. The upper ends of the inner and side surfaces of the restraint members are slanted to facilitate loading of the containers onto the cars.

3,762,341

ROLL-IN BULKHEAD

Franklin P. Adler, Michigan City, Ind., assignor to Pullman Transport Leasing Company, Chicago, Ill.

Filed May 21, 1971, Ser. No. 145,830
Int. Cl. B60p 7/14
U.S. Cl. 105—376 6 Claims



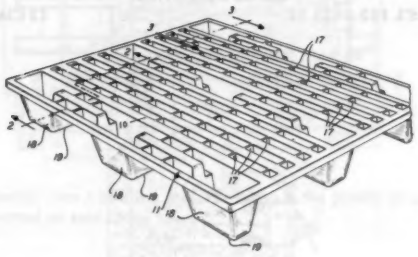
A manually positioned and rollable bulkhead including ratchet type restraining strap takeup devices to secure the bulkhead between the side walls of a railway vehicle so as to confine and restrain a load.

3,762,342

MOLDED PALLET

James J. Lawlor, Glen Rock, N.J., assignor to P.D.Q. Plastics, Inc., Newark, N.J.

Filed Dec. 29, 1971, Ser. No. 213,371
Int. Cl. B65d *19/04*
U.S. Cl. 108—51 5 Claims



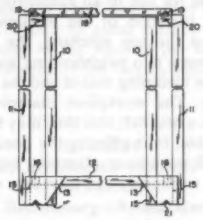
A molded pallet with ranks of parallel top and bottom cavities which are dimensional counterparts of each other in reverse, each top and bottom cavity having a common side wall and each top and bottom cavity having coplanar end walls.

3,762,343

END-NESTING CONTAINERS ADAPTED TO STACK

Fred B. Thacker, Hudson, Ohio, assignor to Bliss & Laughlin Industries, Incorporated, Oakbrook, Ill.

Continuation-in-part of Ser. No. 195,175, Nov. 3, 1971. This application Mar. 3, 1972, Ser. No. 231,472
Int. Cl. B65d *19/38*, *19/44*
U.S. Cl. 108—53 4 Claims



A container is adapted to stack and nest with other like containers. Each container is of a size to act as a storage rack for one or more smaller packages so that a plurality of the containers of this invention may be stacked one on top of the other, along an aisle, or otherwise, to build a series of storage racks up to a height adapted to be serviced by a standard fork lift truck. When not in use, these containers may be nested so as to take up minimum floor area. In a knock-down form of the container there is provided a rigid top assembly, a rigid bottom assembly and four separate corner posts.

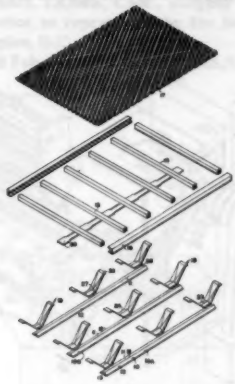
3,762,344

METAL PALLET AND LEG CONSTRUCTION THEREFOR

Ephriam Chez, 22 Coldwell Rd., Regina, Saskatchewan, Canada

Filed Apr. 26, 1972, Ser. No. 247,815
Int. Cl. B65d *19/38*
U.S. Cl. 108—58 3 Claims

The pallet comprises cross beams and end members supported by a plurality of individual legs upon inner and outer pads so that a fork lift truck or the like can engage under the pallet from any one of the four sides with the fork members engaging under the cross beams and/or end members. The legs are formed in a particular truss configuration giving high strength for low weight.

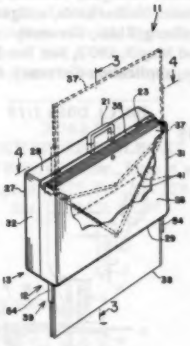


3,762,345

PROTECTIVE SHIELD ATTACHE CASE

Anthony E. Sgariglia, Jr., Oxford, Mass., assignor to Wilfred V. Johnson and John E. Anastasi, Oxford, Mass.

Filed Mar. 22, 1972, Ser. No. 236,862
Int. Cl. E05g *3/00*
U.S. Cl. 109—22 22 Claims



Disclosed is an attache case that can be used in the conventional manner for transporting personal effects but which additionally functions as an armor shield to protect a user from projectiles fired by hand guns. At a time of use an armor assembly is expanded from a compact nested arrangement into an expanded configuration that increases the surface area of the protective shield.

3,762,346

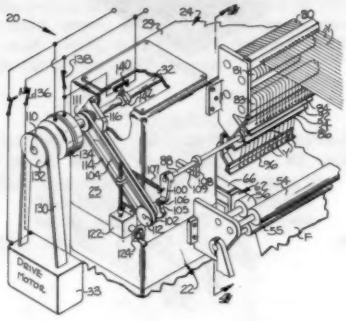
YARN TENSION CONTROL FOR A TUFTING MACHINE

James T. Cobble, Dalton, Ga., assignor to B & J Machinery Company, Inc., Dalton, Ga.

Filed Feb. 28, 1972, Ser. No. 229,834
Int. Cl. D05c *15/16*
U.S. Cl. 112—79 R 6 Claims

A yarn tension control for use with a tufting machine or the like and which is adapted to selectively vary the tension on the yarns during each reciprocation of the needles such that the yarns are tensioned during movement of the needles from their lowered to their raised position to thereby tighten the

tufting loops about the loopers, and the yarns are relaxed when the needles reach their raised position. The machine is designed to be stopped when the needles are in the raised position and the yarns are relaxed such that the machine may be stopped for threading or other purposes without causing stop marks on the pile fabric caused by a prolonged tensioning of the yarns.



3,762,347

APPARATUS FOR SEWING A CONTINUOUS SLIDE FASTENER CHAIN BETWEEN AN UPPER AND A LOWER FABRIC LAYER

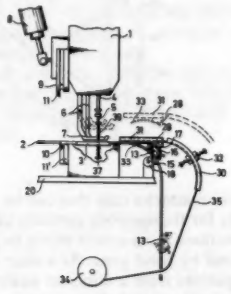
Dieter Sesselmann, Rodigen, Germany, and Hansjurgen Pickert, Kerkrade, Netherlands, assignors to William Prym-Werke KG, Stolberg/Rhld., Germany

Filed May 2, 1972, Ser. No. 249,531

Claims priority, application Germany, May 5, 1971, P 21 22 141.0

Int. Cl. D05b *3/18*

U.S. Cl. 112—105 **12 Claims**



Apparatus for sewing in a single sewing operation a continuous slide fastener chain to portions of an upper and a lower fabric layer located at opposite sides of a slit through these layers while ensuring proper position of the two fabric layers and the slide fastener chain at the start and during the sewing operation. The apparatus comprises a two needle sewing machine provided on its needle plate and its presser foot with vertically aligned stop pins for properly aligning the two fabric layers with each other and a slide fastener chain guide which is movable in a direction normal to the needle plate between an upper inserting position permitting proper placing of the lower fabric layer on the support face of the apparatus and a lower guiding position.

3,762,348

DEVICE FOR TOP STITCHING CUFFS OR THE LIKE WORKPIECE PARTS

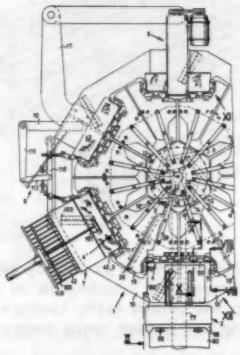
Hubert Junemann, Bielefeld, Germany, assignor to Koch Adler AG, Bielefeld, Germany

Filed Oct. 18, 1971, Ser. No. 189,939

Claims priority, application Germany, Oct. 31, 1970, P 20 53 635.0

Int. Cl. D05b *21/00*

U.S. Cl. 112—121.12 **12 Claims**



Workpiece clamping means for use with sewing machines for the purpose of topstitching joined and subsequently turned layers of workpiece cuts such as cuffs or similar workpiece parts for garments. The workpiece clamping means are provided with a plurality of individually spring-mounted clamping units for clamping the workpiece parts at their external zones. For inserting the joined and turned workpiece parts into the workpiece clamping means, there is provided a device for receiving and inserting. Furthermore, the workpiece clamping means are suitable for use in an automatic sewing device, in which solely the insertion of the workpiece parts is made manually, whereas the top stitching, the cutting-off of the thread chain between two neighbouring workpiece parts, the removing from the clamping means and the stacking is carried out automatically. The workpiece clamping means may be developed in such a manner, that they may be used with an adjustable rotary table, thus offering the possibility of adjusting simultaneously all workpiece clamping means on the rotary table to a desired workpiece size by means of a central adjusting device.

3,762,349

SEWING MACHINE

Marcel Fresard; Francis Plomb, and Olindo Baruffa, all of Geneva, Switzerland, assignors to Mefina S.A., Tribourg, Switzerland

Filed Apr. 6, 1972, Ser. No. 241,694

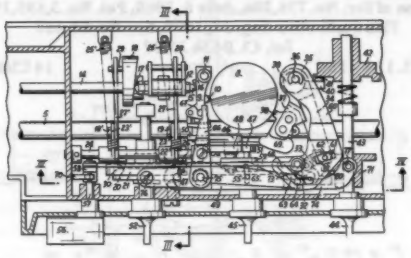
Claims priority, application Switzerland, Apr. 20, 1971, 5713/71

Int. Cl. D05b *3/00*

U.S. Cl. 112—158 B **15 Claims**

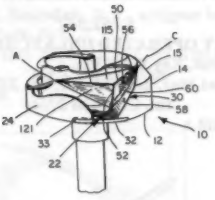
A zigzag stitch sewing machine has the lateral displacement of the needle actuated by a cam selected from a stack of cams mounted in fixed and/or removable manner on a common shaft to which they are secured for rotation with the shaft. The shaft is rotated by the principal drive shaft of the machine ensuring the to-and-fro movement of a needle bar into a pivoting cradle, the cam ensuring the pivoting of the cradle by means of a transmission element. The transmission element comprises a lever hinged to the frame and provided with a feeler in contact with the profile of said cam, a rod driven in a sliding movement, hinged to the cradle, and an intermediate element displaceable between a support surface presented by said

lever and a ramp axially rigid with said rod. The intermediate element is loosely mounted on the rod around which it is



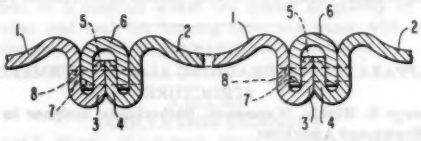
movable over a circular arc. The ramp is the profile of a cam mounted on said rod.

3,762,350
LOCK STITCH SEWING HOOK
Albert R. Starnes, Rt. 2, Norwood, N.C.
Filed Aug. 10, 1972, Ser. No. 279,530
Int. Cl. D05b *57/14*
U.S. Cl. 112—231 **10 Claims**



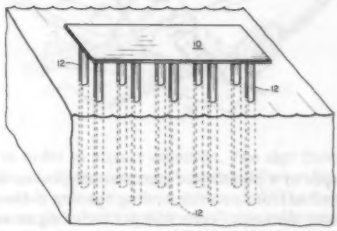
A thread loop-taker in a sewing machine has a hook with a deep groove interrupting its outer surface and a spring bar bridging the opening at the base of the hook between the groove and the extension of the vertical side wall of the loop-taker.

3,762,351
JOINTS FOR FOLDABLE AND INFLATABLE CONTAINERS
Franz-Paul Jager, Hachenburg-Altstadt, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed Nov. 3, 1971, Ser. No. 195,244
Claims priority, application Germany, Nov. 30, 1970, P 20 58 833.4
Int. Cl. D05b *35/06;* **B32b** *7/08*
U.S. Cl. 112—262 **9 Claims**



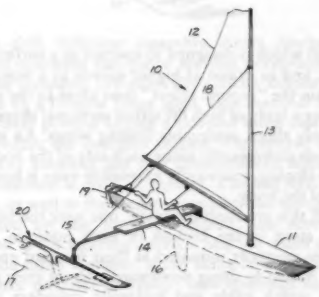
A joint for foldable and inflatable impact-absorbing vehicle air bags formed by bending inwardly the edges of two sections of material joined to form a downwardly depending lip, abutting the lips and sewing the lips together with a double thread lock stitch. A U-shaped band is placed over the sewn lips and sewn to the lips by another double thread lock stitch. Finally, the main portion of the section is sewn to the U-shaped band and the lips by another double thread lock stitch arranged between the other two seams.

3,762,352
LARGE FLOATING OCEAN PLATFORM
John F. Peel Brahtz, LaJolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 24, 1972, Ser. No. 228,933
Int. Cl. B63b *35/00*
U.S. Cl. 114—0.5 D **3 Claims**



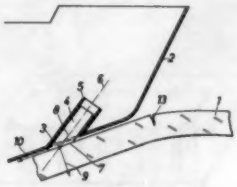
A station keeping apparatus for large floating ocean platforms. The arrangement makes use of wave energy acting on a platform supported by buoyancy derived from the submergence of long vertical columns. The oscillating horizontal component of stream flow in a predominant wave train yields a hydrodynamic force acting on such vertical columns if the latter possesses appropriately profiled cross-sections oriented to the wave flow pattern. A series of such columns can be arranged so that the resultant average hydrodynamic force vector will directly oppose the predominant wind and current vectors which tend to disturb the positioning of the platform.

3,762,353
HIGH SPEED SAILBOAT
Sidney G. Shutt, 612 Briarwood Dr., Brea, Calif.
Filed Sept. 9, 1971, Ser. No. 179,068
Int. Cl. B63h *9/04*
U.S. Cl. 114—39 **7 Claims**



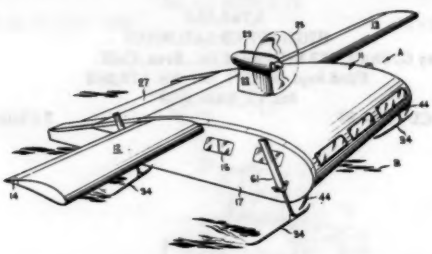
The present invention is directed to a high speed sailboat which uses a horizontal, downward pulley hydrofoil which is extended from the hull on the windward side to provide a stabilizing moment equal and opposite to the sail heeling moment.

3,762,354
AUXILIARY PROPULSION FOR ICE-BREAKING VESSELS
Heinrich Waas, 33 Bramfelder Str. 164, Hamburg, Germany
Filed Aug. 9, 1971, Ser. No. 170,253
Claims priority, application Germany, Aug. 7, 1970, P 20 39 258.9
Int. Cl. B63b 35/08, 35/10
U.S. Cl. 114—41 1 Claim



A stamper or a plurality of stampers adapted to be periodically projected from a corresponding opening in the outer skin of the vessel, the axis of each stamper including an acute angle with the normal direction of movement of the vessel, and the bottom end of each stamper being provided with a pressure plate bearing at its lower surface barbs or pawls adapted to transmit the stamper forces onto the ice.

3,762,355
WATER CRAFT WITH AERODYNAMIC LIFT
Burt F. Raynes, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
Filed July 27, 1970, Ser. No. 58,617. The portion of the term of this patent subsequent to Aug. 2, 1989, has been disclaimed.
Int. Cl. B63b 1/22
U.S. Cl. 114—66.5 H 22 Claims

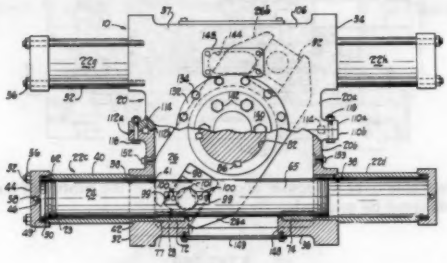


A water craft which is designed to operate as a surface craft at slow speed, and to cruise at higher speeds in a semi-flying condition within the "ground effect" zone close to the surface of the water has a body of high lift airfoil sectional shape and a pair of relatively short, preferably folding wings. An integral pontoon extends downwardly along each side of the body, and a downwardly sloping, rearwardly extensible vane is housed in the after end of the body.

Four takeoff skis are flush-mounted, one near the bow and one near the stern in the bottom of each pontoon. These takeoff skis are pivotally mounted at their forward ends and are resiliently biased to swing downwardly about their pivotal mountings. A winch cable and hydraulic cylinders control pivotal positioning of these take-off skis.

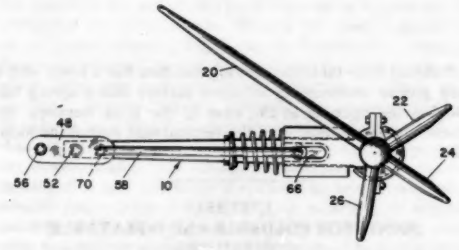
Four cruising skis also are provided, one outboard of each takeoff ski, to provide planing support for a portion of the weight of the craft when the latter is in its high speed cruising attitude. An engine driven airscrew propels the craft when in said cruising attitude, while auxiliary water jet drive means propels the craft when it is supported by flotation of the pontoons on the water.

3,762,356
STEERING MECHANISM FOR SHIPS
William E. Heese, Akron, Ohio, assignor to Allen Electric and Equipment Company, Orrville, Ohio
Division of Ser. No. 776,286, June 6, 1968, Pat. No. 3,595,193. This application Aug. 31, 1970, Ser. No. 68,468
Int. Cl. B63h 25/22
U.S. Cl. 114—150 14 Claims



Fluid actuators for rotating a rudder stock of a ship utilizing a plurality of cylinders with piston rods or rams that operate a tiller attached to the rudder stock. Provision is made for self-alignment of the actuator and the tiller.

3,762,357
MANUALLY OPERATED UNLATCHING ANCHOR
Henry B. Ehrhardt, Key West, Fla.
Filed Mar. 2, 1973, Ser. No. 337,561
Int. Cl. B63b 21/44
U.S. Cl. 114—208 A 5 Claims

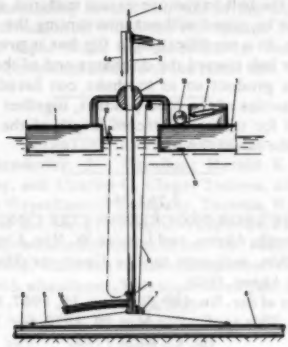


A boat anchor having a shank with movable or rotatably mounted flukes and fine adjacent one end which have a normal locked or latched position for digging into the sea bottom or the bottom of any other body of water thus functioning as any conventional anchor. There is a latching mechanism for manually unlatching the flukes and fins to permit them to freely turn or rotate and free the anchor should it be lodged or caught under rocks, hard corral, sunken debris, cables etc.

3,762,358
APPARATUS FOR DRAGGING ALONG A SUBMERGED STRUCTURE
George S. Hinkle, Wassenaar, Netherlands, assignor to R. J. Brown and Associates
Filed May 26, 1971, Ser. No. 146,960
Claims priority, application Netherlands, May 27, 1970, 7007662
Int. Cl. B63b 21/56
U.S. Cl. 115—7 7 Claims

Apparatus for dragging along a structure submerged in a body of water is attached by a pulling cable to the structure and is carried by the lower end of a pole or post which depends from a floating vessel and is mounted by a universal joint on said vessel. A cable extends from a winch on the ves-

sel down over a pulley carried by the lower end of the pole to an anchor towards which the vessel and submerged structure



are to be drawn and means are provided for moving the pole upwardly or downwardly to adjust the position of the lower end of the pole relative to the floor of the body of water.

3,762,359

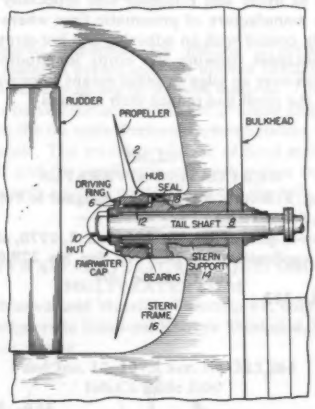
MARINE PROPELLER STERN BEARING-SHAFT DESIGN AND SEAL ARRANGEMENT

John P. Jones, Jr., Scarsdale, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 20, 1971, Ser. No. 190,852

Int. Cl. B63h 5/00

U.S. Cl. 115—34 R **9 Claims**



A ship's propeller, drive shaft and bearing support design which will locate the bearing from its traditionally forward position to a position within the center of gravity of the propeller and seal the bearing from sea water with non-rubbing parts comprising a labyrinth seal is described.

3,762,360

VEHICLE SIGN ASSEMBLY

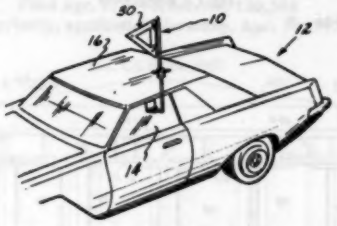
Edward L. Hawes, Hazel Park, Mich., assignor to Hawes Industries, Inc., Hazel Park, Mich.

Continuation-in-part of Ser. No. 107,721, Jan. 19, 1971, Pat. No. 3,672,323, and a continuation-in-part of Ser. No. 79,727, Oct. 12, 1970. This application Nov. 22, 1971, Ser. No. 200,778

Int. Cl. B60q

U.S. Cl. 116—28 R **8 Claims**

A sign assembly for use on a vehicle having at least one generally vertically adjustable window for mounting a clamp portion of the sign thereto. The clamp portion supports a standard which carries a sign generally upward and above the roof of the vehicle so that the sign is visible from all directions. In a first embodiment the sign assembly includes a reflectorized triangular sign which is collapsible for storage. In a second embodiment the sign has a flag portion to be used to carry a message such as to indicate that the vehicle is for sale or is in distress. The flag is mounted to a frame section which is



rotatable in order to attract attention. The sign frame section is adapted to easily mount and dismount different flag portions to the assembly and at the same time to hold the flag portions taut and securely mounted. Universal type adjustment means are provided in the standard of both embodiments to elevationally position the signs and also to adjust and lock the signs in any axially rotated position so that the signs will be properly positioned above the roof of the vehicle regardless of the configuration of the window edge and of the vehicle roof.

3,762,361

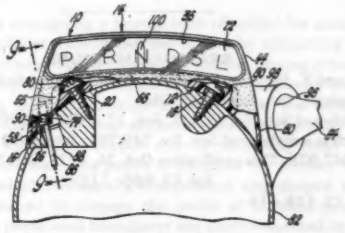
SHIFT INDICATOR ARRANGEMENT

Theodore Lambiris, Walled Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 1, 1971, Ser. No. 194,128

Int. Cl. G09f 9/00

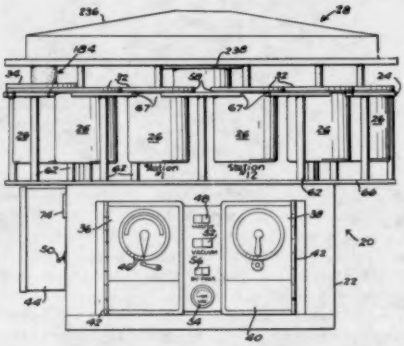
U.S. Cl. 116—124 R **6 Claims**



The shift indicator assembly shown discloses a steering column-mounted one-piece molded polypropylene indicator housing including two generally arcuate shaped members connected by a flexible hinge joint. One member includes a window frame portion having a slot and three side grooves to accommodate the insertion therein of a tapered lens. The other narrower member has two counterbored openings in which are mounted a pair of screws. Confinement of the screw heads, as well as the lens, occurs after the narrower member is mounted on the steering column, the screws threadedly secured to the steering column, and the wider member folded onto the other member, there being tabs and a rib formed on the latter member to "snap" into openings and past a ridge, respectively, formed on the outer member. An opening is formed on an end portion of the lens to accommodate a fiber optic light tube. A series of steps or ridges, also formed on the end portion of the lens, serves to direct the light from the end of the tube across the lens, whereupon the tapered shape of the lens causes the light to be observed through the window at a substantially constant intensity. The manually rotatable shift bowl shroud and integral pointer are located directly behind

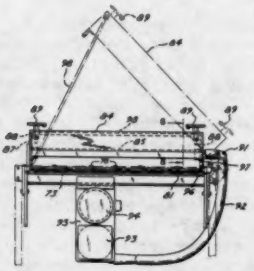
the housing, on the side away from the operator, selectively indicating through the window the various P-R-N-D-S and L indicia formed on the lens.

3,762,362
AUTOMATIC TISSUE PROCESSOR
Julius Lipshaw, 7446 Central Ave., Detroit, Mich.
Filed Sept. 1, 1971, Ser. No. 177,020
Int. Cl. B05c *3/04*
U.S. Cl. 118—5 **6 Claims**



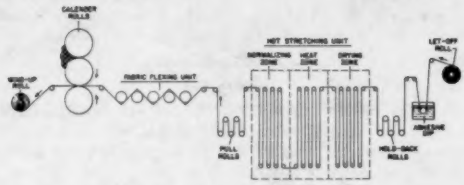
A machine for processing histological tissue having a tissue carrier basket suspended from a turntable overlying a plurality of beakers suspended from a carrier plate. The turntable is raised, indexed, and lowered by a suitable driving mechanism to move the tissue basket sequentially through the beakers. Three timers can each be programmed to control the movement of the turntable to provide various different cycles for processing the tissue. Some of the beakers are received in individual thermal baths to heat and control the temperature of the substances received in the beakers for treating the tissue.

3,762,363
BREADING MACHINE
Richard T. Johnson, Sandusky, Ohio, assignor to Sam Stein Associates, Inc., Sandusky, Ohio
Division of Ser. No. 22,239, Jan. 12, 1970, Pat. No. 3,647,189, which is a division of Ser. No. 740,701, June 27, 1968, Pat. No. 3,547,075. This application Oct. 26, 1971, Ser. No. 192,170
Int. Cl. B05c *11/06*
U.S. Cl. 118—16 **2 Claims**



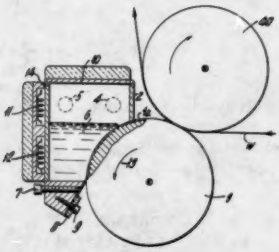
A machine for coating a food product with breading material has an elevated hopper for storing the breading material and means for feeding the same in a smooth and controlled manner from the hopper, through a free-flowing downspout to be deposited on a belt beneath the food product, together with means for feeding the breading material in a smooth and controlled manner from the hopper to be deposited on top of the food product with a control valve at such outlet to control the rate of feed. A hooded portion of open mesh belt conveyor is provided near the discharge end of the machine with air spray pipes above the belt to remove excess material, and the hood is adapted to be raised without interrupting the operation of the machine. In a modification, a flip bar is provided across the conveyor belt toward the discharge end of the machine to flip over the product so as to shake out breading material lodging in cavities of the food product, together with a novel arrangement for taking up excess length of the belt after it passes over the raised flip bar.

3,762,364
APPARATUS FOR PROCESSING TIRE CORD FABRIC
Owen B. Funsch, Akron, and Grover W. Rye, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 609,502, Jan. 16, 1967, Pat. No. 3,575,761. This application May 20, 1970, Ser. No. 38,612
Int. Cl. B05c *11/00*
U.S. Cl. 118—33 **7 Claims**



Apparatus for treating textile cords formed of thermoplastic fibers such as nylon and polyester and especially the cords used in the manufacture of pneumatic tires where the cords are normally coated with an adhesive and hot-stretched. The treatment includes drawing the cords longitudinally while under tension over an edge or other means to provide a bend in or to flex the cords and reduce their stiffness.

3,762,365
WEB COATING APPARATUS
Peter Herzog, Fribourg, Switzerland, assignor to Polytype AG, Fribourg, Switzerland
Continuation-in-part of Ser. No. 291, Jan. 2, 1970, abandoned. This application Feb. 24, 1972, Ser. No. 229,003
Int. Cl. B05c *1/04*
U.S. Cl. 118—212 **4 Claims**



An apparatus for coating paper, tissue, cardboard, metal foils, thermoplastic films and similar materials includes a hard surfaced raster roll having regularly formed depressions or cells inset into its circumferential surface and over which surface the material to be coated is directed. A portion of the circumferential periphery of the raster roll rotates through an opening in a tank containing a liquid melt of the substance to be coated. The raster roll picks up the liquid melt as its circumferential peripheral surface rotates through the tank and a

wiper blade is positioned at the location at which the roll exits from the tank for removing any excess of the liquid melt and retaining it within the tank. The blade has its edge,which contacts the roll,extending toward the roll in the direction opposite to the direction in which the roll rotates. Further, the tank and the wiper blade are mounted for oscillatory or reciprocatory movement relative to the raster roll.

3,762,366

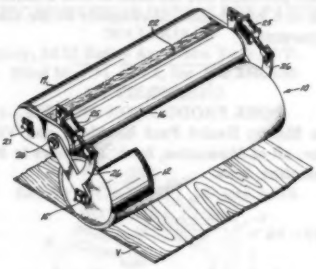
COATING APPLICATOR

Charles Blickenderfer, Jr., Puyallup; Harold E. Erickson, Federal Way, and Charles C. Clapp, Tacoma, all of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Division of Ser. No. 871,710, Nov. 20, 1969, Pat. No. 3,587,153, which is a continuation of Ser. No. 746,694, July 2, 1968, abandoned, which is a continuation of Ser. No. 481,305, Aug. 20, 1965, abandoned. This application Jan. 22, 1971, Ser. No. 108,823

Int. Cl. B05c *1/08*

U.S. Cl. 118—262 **2 Claims**



An applicator apparatus for placing a predetermined amount of material evenly over an uneven surface. The applicator roll has a covering of resilient material. This material has an outer barrier surface and an initial Shore Durometer of 60 or less on the 00 scale. Preferably, it is between 60 and 15 on the 00 scale. The transfer rolls are of hard material. The transfer roll and the applicator roll both rotate in the same direction causing a sliding contact between the rolls.

3,762,367

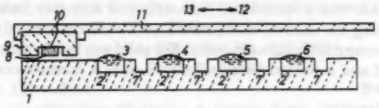
GROWTH APPARATUS FOR A LIQUID GROWTH MULTI-LAYER FILM

Junichi Nishizawa, and Masahito Takusagawa, both of Sendai, Japan, assignors to Handotai Kenkyu Shinkokai, Sendai-shi, Miyagi-ken, Japan

Filed Jan. 12, 1973, Ser. No. 323,264

Int. Cl. B05c *3/00*

U.S. Cl. 118—422 **3 Claims**



A growth apparatus for a liquid growth multi-layer film, in which a growth substrate is housed in a hollow of a first supporter, in which a plurality of molten liquids are respectively provided in a plurality of hollows arranged in regular spaces on one surface of a second supporter, and in which one of the first supporter and the second supporter is moved with respect to the other in opposing the growth substrate with the molten liquids. In accordance with the present invention, the growth substrate provided in the first supporter is shifted closely to and at the upper side of the molten liquids, and the second supporter is provided with a plurality of small hollows each at a space between adjacent hollows of the second supporter.

3,762,368

SOLDER BATH FOR FLUX-FREE TINNING

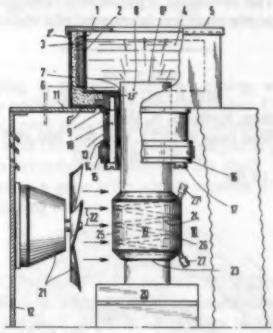
Wolf-Dietrich Strube, Munich, and Michael Fleischer, Soecking, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 1, 1971, Ser. No. 130,344

Claims priority, application Germany, Apr. 14, 1970, P 20 17 862.5

Int. Cl. B05c *3/05*

U.S. Cl. 118—429 **5 Claims**



A device for containing a heated bath of solder for coating or tinning an object without the use of flux by subjecting the bath and object to ultrasonic waves during the tinning process characterized by a probe or sonotrode of the ultrasonic transducer entering the bath through an aperture in the bottom wall of the container so that ultrasonic waves permeate the bath without wave interference due to reflecting from the walls of the container. The probe is sealed to the bottom wall by a device which includes a compressed ring-shaped seal member positioned to engage the probe at a nodal plane. Preferably the probe and transducer are interconnected by an intermediate member which is cooled either by fluids flowing through channels therein, or by a stream of air from a fan which stream is directed at the member so that the transducer does not become damaged by the heat conducted by the probe from the solder bath.

3,762,369

PET SANITARY LITTER FACILITY

Viola Hall Barnum, New York, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

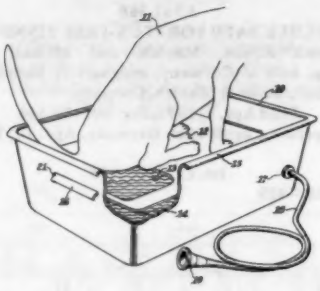
Filed Feb. 1, 1972, Ser. No. 222,472

Int. Cl. A01k *29/00*

U.S. Cl. 119—1 **1 Claim**

A sanitary litter facility for use by pets, which is portable and readily cleansed. The device is in the form of an open pan in which a detachable platform is mounted to the container sides. Opposite sides of the container each have a mounting slot to receive a protrusion extending from each end of the platform. The platform is designed to support the weight of an animal pet, and is designed with a large open slot to enable the excrement of a pet, resting on the platform, to be gathered on the pan bottom. A flexible tube, for flushing the

container, is fastened to one container side, with the free end of the tube fitted with a flexible socket for fastening over a

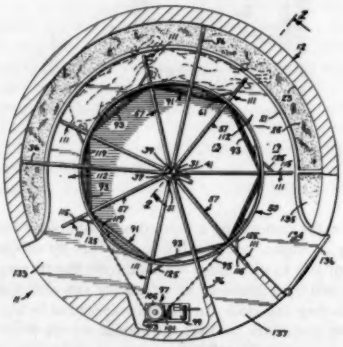


water faucet. The container is preferably fabricated of plastic, with the detachable platform fabricated of a stainless steel.

3,762,370
MILKING PARLOR

Grant L. Gulleson, Rutland, N. Dak.

Filed June 8, 1972, Ser. No. 260,995
Int. Cl. A01j *5/00*
U.S. Cl. 119—14.03 **11 Claims**



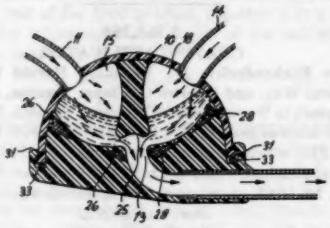
A milking system is disclosed having a stationary circular base upon which cows being milked and fed are guided around by a circular framework having a center of rotation about a pipe located at the center of the framework. The pipe serves the purpose of guiding the framework in a horizontal direction, and roller bearings are provided near the periphery of the framework for supporting the framework. The framework is rotated by a chain which is wrapped around the framework and driven by an electric motor.

3,762,371
METHODS AND APPARATUS FOR THE DETECTION OF MASTITIS IN MILK ANIMALS

Joshua Creer Quayle, Stockton, and Graham Roland Greatrix, Seaton Carew, both of England, assignors to National Research Development Corporation, London, England

Division of Ser. No. 50,711, June 29, 1970, Pat. No. 3,695,230.
This application June 23, 1972, Ser. No. 265,496
Claims priority, application Great Britain, June 30, 1969, 33,032/69
Int. Cl. A01j *07/00*
U.S. Cl. 119—14.14 **10 Claims**

Apparatus and methods for comparing the conductivities of liquid streams by induction are described. Such apparatus and methods have particular application in detecting mastitis in milk animals where differences in the conductivities of milk streams from different teats of the same animal may indicate the presence of mastitis. The apparatus described is specially suited for use with milking machinery in that it is economical

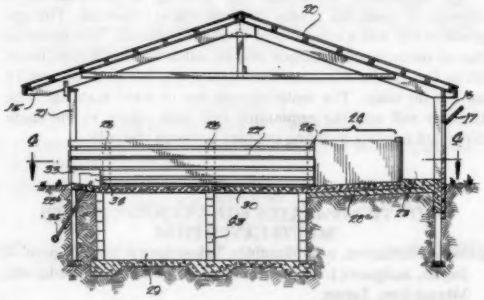


to manufacture and is easy to keep clean. In one embodiment four coils are provided one for each of four conductivity measuring cells in a hemispherical chamber in the claw piece of milking apparatus.

3,762,372
PORK PRODUCTION CENTER

Glen Allen Mente; Daniel Paul Kraklow, and Virgil Albert Schneider, all of Muscatine, Iowa, assignors to Kent Feeds, Inc., Muscatine, Iowa

Filed Aug. 24, 1970, Ser. No. 66,188
Int. Cl. A01k *01/00*
U.S. Cl. 119—16 **3 Claims**



A structure for raising animals such as swine in which a plurality of pens or stalls are provided with a passageway providing access thereto. The structure is provided with windowed end walls and a windowed side wall with one side being open providing for natural air circulation. The floor area of the pen area comprises a combination of a solid portion which can be heated and a slatted portion located over a manure collection pit.

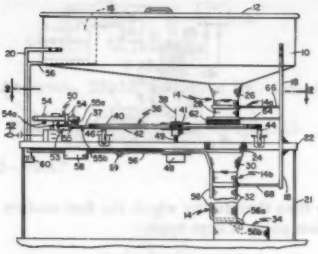
3,762,373
ANIMAL FEEDER

Gary S. Grossman, 22 Buckley St., Quincy, Mass.

Filed Feb. 14, 1972, Ser. No. 226,092
Int. Cl. A01k *05/02*
U.S. Cl. 119—51.11 **9 Claims**

Apparatus for storing and automatically dispensing food for an animal comprising a hopper for holding the food; a channel communicating with the hopper and having an outlet; a disc-shaped member mounted for rotation with respect to the

channel about an axis spaced apart from the channel, the member including an arcuate opening spaced from the axis



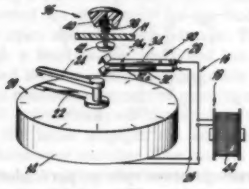
the same distance as the channel; and means for rotating the member at a predetermined time of day.

3,762,374

AUTOMATIC DISPENSING DEVICE FOR PARTICULATE MATERIAL

George Szekely, 3123 Bailey Ave., New York, N.Y.

Filed May 31, 1972, Ser. No. 258,430
Int. Cl. A01k *5/02*
U.S. Cl. 119—51.11 **18 Claims**



An automatic dispensing device for particulate material, such as fish food in a powdered or flake form, includes a clock arranged so that its hands close and open a switch in an electrical circuit. A vibrating device is connected to the circuit for operation when the switch is closed for vibrating a container from which the particulate material is dispensed. The hands on the clock, and particularly the minute hand, is shaped to afford a fine adjustment of the duration of the vibrating action. Further, a container with an agitating member at its outlet affords effective dispensing of individual particles of flake-form fish food under the action of the vibrating device. The agitating member provides a valve-like action at the outlet and can be in the form of a sphere, a cone and other compatible shapes.

3,762,375

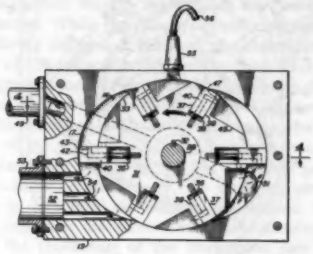
ROTARY VANE INTERNAL COMBUSTION ENGINE

Arthur P. Bentley, Box 139, Boerne, Tex.

Filed Jan. 24, 1972, Ser. No. 220,293
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.31 **9 Claims**

This specification discloses a rotary vane internal combustion engine comprising a casing defining a rotor chamber of a shape resembling an ellipse. A shaft is journalled in the casing centrally thereof and driveably mounted on the shaft is a rotor presenting a cylindrical surface. The rotor is formed with a plurality of radial slots and slideably in each slot is a vane. The rotor is also formed with a plurality of combustion chambers opening onto its cylindrical surface. The number of combustion chambers is the same as the numbers of slots with a chamber being located between two adjacent slots.

An intake port for an air, gas, oil mixture is formed in the casing and communicating with this port are a pair of channels formed in the casing on opposite sides of the rotor chamber. These channels pass about the shaft where it is journalled in the casing and open onto the rotor chamber at points diametrically opposite to the intake port. A manifold type exhaust is formed in the casing about 30° in the direction of rotation of the rotor from the intake port.



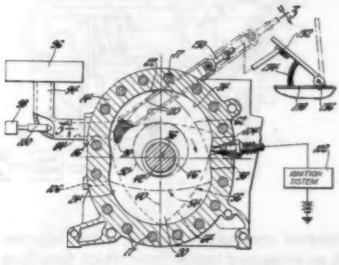
A spark plug is mounted on the casing with its points located at the periphery of the rotor chamber. Conductors extend from the spark plug to contacts mounted on the exterior of the casing with the contacts being bridged at periodic intervals by a cam driveably mounted on the shaft. The shaft also driveably carries a gear with which meshes a pinion that is driven by a starting motor.

3,762,376

ROTARY COMBUSTION ENGINE POWER CONTROL

Meinrad K. Eberle, Sterling Heights, and Edward D. Klomp, Mt. Clemens, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 2, 1972, Ser. No. 222,792
Int. Cl. F02b *53/06*
U.S. Cl. 123—8.01 **3 Claims**



A rotary combustion engine of the planetary rotor type having a variable intake port area providing variable power control.

3,762,377

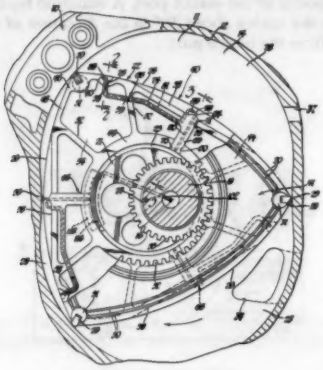
SPARK PLUG AND ROTOR ASSEMBLY FOR A ROTARY COMBUSTION ENGINE

Parme G. Anthony, Centerville, and David N. Bond, Xenia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed June 21, 1972, Ser. No. 264,915
Int. Cl. F02b *53/00, 53/12, 55/00*
U.S. Cl. 123—8.01 **3 Claims**

A spark plug and rotor assembly for a rotary combustion engine having two rotor parts with mating interfaces with one rotor part having an integral phasing gear and the other rotor part being hollow and having an integral hub and an axially ex-

tending coolant passage therethrough and a spark plug for each chamber face of the rotor mounted in the interface of the



hollow rotor part prior to joining this interface with the interface of the other rotor part.

3,762,378

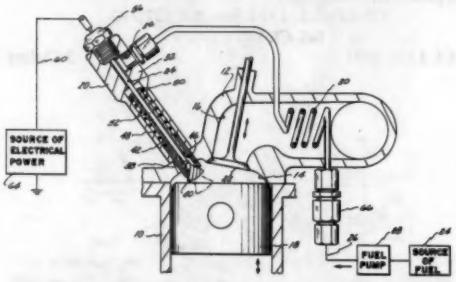
FUEL INJECTION MEANS AND PROCESS FOR MAKING SAME

Frank E. Bitonti, 8337 Esper, Detroit, Mich.

Filed Nov. 8, 1971, Ser. No. 196,624

Int. Cl. F02b *3/00*; F02m *31/00*

U.S. Cl. 123—32 H **8 Claims**



In an internal combustion engine, a fuel injector having a valve with an elongated hollow stem which functions as a conduit for fuel being delivered to the valve opening. A heater probe is telescopically disposed in the stem to preheat the fuel. The valve is biased by a calibrated spring arrangement that is suited for automatic assembly.

3,762,379

SYSTEM FOR INJECTING METERED QUANTITY OF FUEL INTO ENGINE

Nobuhito Hobo, Inuyama-shi; Yoshimi Natsume, Toyohashi-shi, and Yutaka Suzuki, Nishio-shi, all of Japan, assignors to Nippondenso Co. Ltd., Kariya-shi, Aichi-ken, Japan

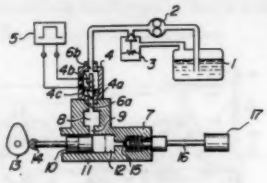
Filed July 29, 1971, Ser. No. 167,299

Claims priority, application Japan, Aug. 10, 1970, 45/69926

Int. Cl. F02b *3/00*; F02m *39/00*

U.S. Cl. 123—32 AE **2 Claims**

A system for injecting a metered quantity of fuel into an engine having a fuel injection pump, an electrically controlled metering valve, and a fluid passage connecting the fuel outlet port of the metering valve to the fuel suction port of the fuel injection pump. In the system, the volume of the fluid passage is suitably selected to lie within a specific range so that the metering of fuel by the metering valve is continued for a period of



time more than that during which the fuel suction port of the fuel injection pump is kept open.

3,762,380

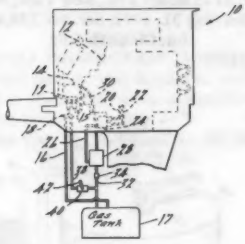
ENGINE DRAINAGE REUSE SYSTEM

Walter Donald Schultz, Neosho, Wis., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 8, 1971, Ser. No. 121,646

Int. Cl. F02b *33/04*

U.S. Cl. 123—73 R **21 Claims**



A puddle drainage reuse system, particularly for outboard engines, wherein a valve, closed at low engine speeds, is opened at higher engine speeds to allow puddle drainage to mix with the fresh fuel as it flows to the engine.

3,762,381

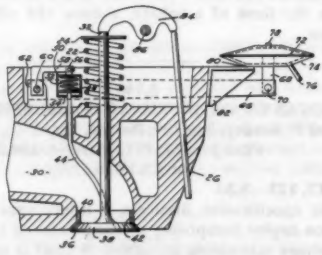
VARIABLE INTERNAL COMBUSTION ENGINE VALVE OPERATING SYSTEM

Sharad M. Dave, 14574 Braile, Detroit, Mich.

Continuation-in-part of Ser. No. 59,638, July 30, 1970, abandoned. This application Oct. 30, 1972, Ser. No. 302,004

Int. Cl. F01l *1/34*, *3/22*

U.S. Cl. 123—90.15 **13 Claims**



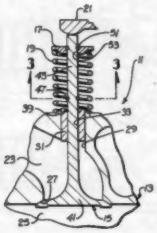
System for automatic variation of valve operation including an apparatus and method utilizing the intake manifold vacuum of an internal combustion engine to control the position of auxiliary sleeve valves adjacent the conventional engine valves and thereby change the effective opening and closing of the engine valves. The result is an automatic adjustment of valve timing as a function of intake manifold vacuum, engine speed or accelerator pedal position to obtain maximum efficiency

and low emissions throughout the operating range of the engine from idle through wide open throttle. An additional benefit that may be incorporated is improved engine breaking as well as lowered emissions under deceleration conditions.

3,762,382
VALVE

Arthur S. Anderson, 25032 Armagosa Dr., Laguna Niguel, Calif.

Filed June 18, 1971, Ser. No. 154,323
Int. Cl. F01l *3/10, 3/00*
U.S. Cl. 123—90.67 **1 Claim**

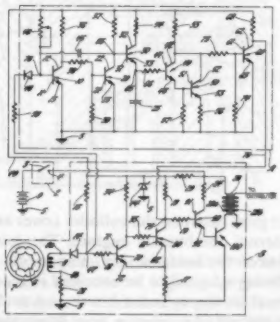


A valve adapted for use with an internal combustion engine comprising a body having a passage therethrough and a valve element including a valve head and a valve stem. The valve element is mounted for movement on the body so that the valve head can open and close the passage. The valve stem projects through a bore in the body and has an insurance member mounted thereon which is engageable with an abutment to limit the maximum amount of opening of the valve. A peripheral wall substantially circumscribes the insurance member when the latter engages the abutment to prevent removal of the insurance member. The valve is biased toward a closed position by a spring which extends between the body and a valve spring retainer. The valve spring retainer is mounted on the valve stem by a split ring which is received in a counterbore in the valve spring retainer.

3,762,383
INTERNAL COMBUSTION ENGINE SPEED LIMIT CIRCUIT

Roy C. Richards; Paul D. Le Masters, and James E. Shearer, all of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed July 2, 1971, Ser. No. 159,107
Int. Cl. F02p *11/06*
U.S. Cl. 123—102 **1 Claim**

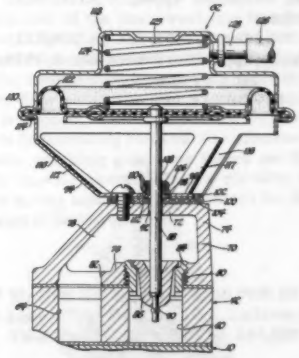


An internal combustion engine speed limit circuit for preventing the engine speed from exceeding a predetermined maximum. A monostable multivibrator circuit, responsive to the engine ignition signals, produces a series of equally spaced electrical pulses at a repetition rate proportional to engine speed. These signals base bias a charge circuit transistor conductive to periodically establish a charge circuit for a capacitor and a base drive circuit for two transistors connected in Darlington pair which, while conducting, divert base drive current from a control transistor through the current carrying electrodes thereof, thereby maintaining the control transistor not conductive. While the charge circuit transistor is not conducting during the spaces between the electrical pulses, the discharge of the capacitor supplies the base drive current for the transistors of the Darlington pair to maintain these devices conductive and, consequently, the control transistor not conductive. As the speed of the motor increases, the duration of each one of the series of electrical pulses decreases until, at the predetermined engine speed, the electrical pulses are no longer produced, consequently, the charging circuit for the capacitor is no longer periodically established. The charge upon the capacitor dissipates through the base-emitter electrodes of the transistors of the Darlington pair until it has reduced to a predetermined minimum at which insufficient base drive current is supplied thereby to maintain the Darlington pair conductive. Base drive current is then supplied to the control transistor which conducts through the collector-emitter electrodes thereof to disenable the ignition system of the engine.

3,762,384
EXHAUST GAS RECIRCULATION VALVE

Edward G. Day, Rochester, and Ernst L. Ranft, Webster, both of N.Y., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 90,399, Nov. 17, 1970, abandoned. This application Jan. 24, 1972, Ser. No. 220,036
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **9 Claims**



A diaphragm operated control valve assembly, responsive either to vacuum conditions at an induction passage slot traversed by the edge of the throttle or to exhaust back pressure, controls recirculation of exhaust gases from the intake manifold exhaust crossover passage to the intake manifold induction passages.

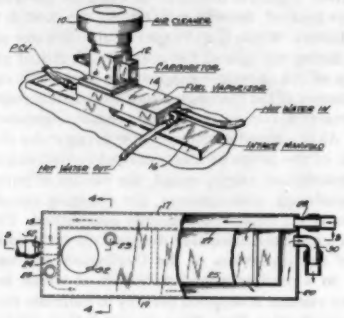
3,762,385
AIR FUEL PREHEATER FOR INTERNAL COMBUSTION ENGINE

Harold S. Hollnagel, 918 W. Laramie Ln., Milwaukee, Wis.

Filed Mar. 29, 1971, Ser. No. 129,056
Int. Cl. F02m *31/04, 31/10;* **F02f** *9/00*
U.S. Cl. 123—122 A **3 Claims**

A water-jacketed fuel vaporizing chamber is interposed between the carburetor and the intake manifold on an internal

combustion engine. The flow path is tortuous and of considerable length which induces some turbulence and insures full vaporization of the gasoline. Carbon monoxide emission



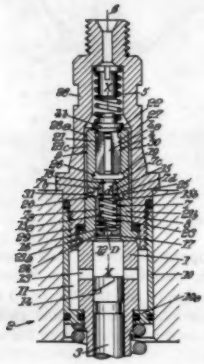
was reduced 73 percent on a test vehicle to a level below the 1975 Federal Standards. Unburned hydrocarbons and nitrogen oxides were respectively reduced 40.6 percent and 36 percent but not to the 1975 Federal Standards.

3,762,386

INJECTION DEVICES FOR INTERNAL COMBUSTION ENGINES

Andre Vuaille, Lyon 69, France, assignor to Societe Industrielle Generale de Mecanique Appliquee S.L.G.M.A., Venissieux (Rhone), France

Filed Dec. 2, 1971, Ser. No. 204,032
Claims priority, application France, Dec. 4, 1970, 7043752
Int. Cl. F02m *59/02, 61/20*
U.S. Cl. 123—139 DP 5 Claims



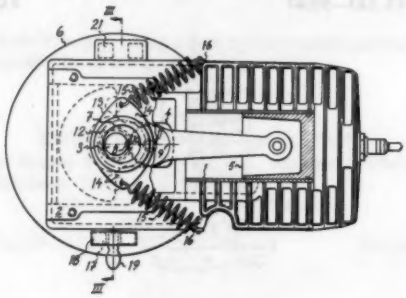
The injection device has in addition to the delivery valve a reaspirating valve. The valves are arranged in sequence downstream of the pump cylinder and are aligned with this cylinder. The reaspirating valve is provided with an axial passage permanently open and adapted to allow the fuel delivered from the pump cylinder towards the delivery valve. The advantage of the device resides in a reduction in pressure drops.

3,762,387

ARRANGEMENT FOR AUTOMATICALLY POSITIONING A PISTON IN AN INTERNAL COMBUSTION ENGINE

Folke Ivar Blomberg, Lidingo, and Lars Helge Gottfrid Tholander, Huskvarna, both of Sweden, assignors to Husqvarna Vapenfabriks Aktiebolag, Huskvarna, Sweden

Filed Aug. 31, 1970, Ser. No. 68,261
Claims priority, application Sweden, Aug. 29, 1969, 11985/69; May 25, 1970, 7159/70
Int. Cl. F02n *17/00*
U.S. Cl. 123—179 A 9 Claims



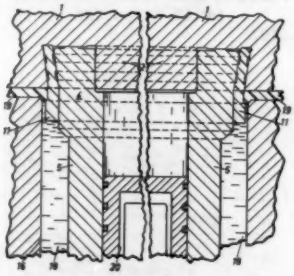
A piston in an internal combustion engine is positioned, i.e., moved from any position in a complete working cycle including all strokes of the engine, to a distinct position by tensioning means and at least one elastic member which, as a result of the reciprocating movements of the piston mutually actuate each other so that the elastic member is tensioned during the passage of the piston from the distinct position in the working cycle and is relaxed during the moving of the piston towards the distinct position.

3,762,388

GASTIGHT JOINT BETWEEN THE CYLINDER COVER AND THE CYLINDER LINING OF INTERNAL COMBUSTION ENGINES

Konstantinas Tamulenas, Goteborg, Sweden, assignor to Aktiebolaget VOLVO, Goteborg, Sweden

Filed Dec. 14, 1971, Ser. No. 207,896
Claims priority, application Sweden, Dec. 15, 1970, 16953/70
Int. Cl. F02f *1/24*
U.S. Cl. 123—193 CH 7 Claims



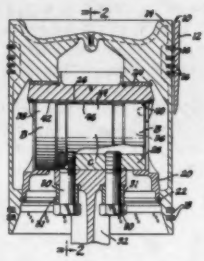
A gastight joint between the cylinder cover and the cylinder lining of internal combustion engines. The joint comprises a collar portion on the lining having an upwardly flared configuration and being adapted to be received in a correspondingly flared channel in the cylinder cover and sealingly clamped therein with the aid of a pressure ring. When the ring is forced into the space between the collar portion of the lining and the cover channel it is deformed, thus providing a completely gastight seal without the aid of gaskets of any kind.

3,762,389

ROCKING PISTON BEARING

John A. Malina, Westchester, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed June 26, 1972, Ser. No. 266,062
Int. Cl. F16j 1/14; F16c 5/00
U.S. Cl. 123—197 AB 3 Claims



In a preferred embodiment, an engine piston-connecting rod assembly includes rocking bearing means having two sets of cooperating bearing surfaces which alternate in accepting compression loads while providing for separation of each set of surfaces when unloaded to permit the admission of lubricant. The position of the load transfer point between one set of bearing surfaces and the other is selected so that a load transfer is timed to occur closely following the occurrence of the cyclic peak load point for each cycle, with the result that average lubricant film thickness in the bearing is maximized.

ERRATUM

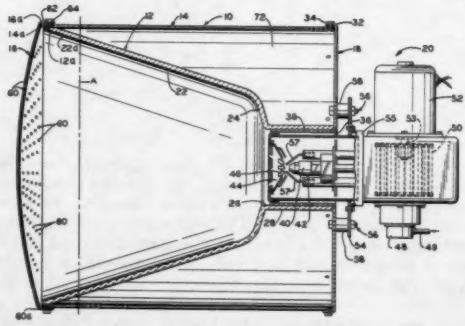
For Class 125—8.31 see:
Patent No. 3,762,375

3,762,390

OIL-FIRED, INFRARED HEATER

Ralph R. Mendelson, c/o The Glass Lined Water Heater Co., 13000 Athens Ave., Cleveland Hts., Ohio

Filed Mar. 8, 1972, Ser. No. 232,845
Int. Cl. F24c 5/08
U.S. Cl. 126—92 R 10 Claims



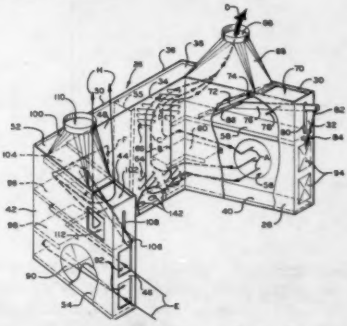
An oil-fired infrared heater is disclosed including a conical, thin wall combustion chamber of high temperature refractory fiber removably disposed within and supported at its opposite ends by a cylindrical sheet metal housing. One end of the housing supports an oil burner assembly by which oil and air are introduced into one end of the combustion chamber, and an apertured metal plate is disposed across the opposite end of the chamber and is removably interconnected with the cylindrical housing. The apertures in the metal plate account for a very small percentage of the total area thereof, whereby a considerable amount of inner and outer metal surface area exists about and between the plate apertures. During burner operation the chamber wall and the apertured plate are heated to incandescence. The apertures in the plate allow products of combustion to escape outwardly of the combustion chamber, and the inner and outer surface portions of the plate respectively reflect heat back into the chamber and radiate heat outwardly from the outer surface of the apertured plate.

3,762,391

FIREPLACE UNIT WITH CONTROLLABLE HEAT CIRCULATION

George M. Andrews, Syracuse, N.Y., assignor to Vega Industries, Inc., Syracuse, N.Y.

Filed July 15, 1971, Ser. No. 162,893
Int. Cl. F24b 7/02
U.S. Cl. 126—121 16 Claims



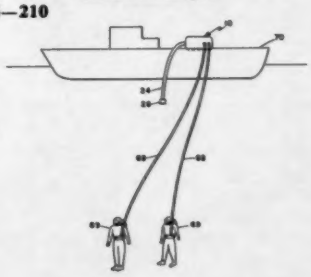
A fireplace unit of the heat-circulating type having means for selectively controlling the proportions of heated air circulated back into the room and vented to the outside through the chimney. The construction is such that protective cooling air continues to flow within the unit when the supply of room heating air is stopped, as well as when the normal inlet for the cooling air is inadvertently blocked. Also disclosed are means for optionally providing gravity or forced air flow, and for dividing the heating chamber into a plurality of compartments, each having separate control means for the recirculation or exhaust of heated air.

3,762,392

HOT WATER HEATER SYSTEM FOR DIVERS

Richard W. Long, 87016 La Mesa Blvd., La Mesa, Calif.

Filed May 19, 1971, Ser. No. 144,889
Int. Cl. A61f 7/06
U.S. Cl. 126—210 1 Claim



A system for delivering heated water to divers including a circulation system having a source of heat and a heat

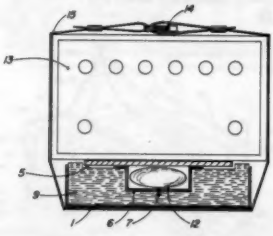
exchanger for transferring the heat to water in the circulation system, and a supply system utilizing centrifugal pumps to deliver water to the circulation system. The circulation system has sufficient volume so that the fluctuation in temperature caused by variation in the amount of water demanded by the diver or divers is minimized. An automatic temperature controlled device is provided to regulate the temperature of the water delivered to the diver by mixing controlled amounts of unheated water with water from the circulation system heated to a temperature in excess of that required.

3,762,393

HAND WARMER BATTERY HEATER

Louis Richard O'Hare, 2700 Indianna, N.E., Albuquerque, N. Mex.

Filed Jan. 3, 1972, Ser. No. 215,017
Int. Cl. F23c *5/00*
U.S. Cl. 126—263 **1 Claim**



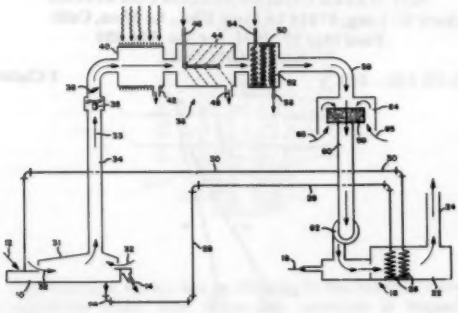
An automobile electric battery heater is disclosed using a hand warmer of the glowing carbon or glowing wick with hydrocarbon fuel in which the heat from the hand warmer is transferred to the electric battery by means of a thermally conductive metalic plate placed in contact with both the hand warmer and the battery and in which loss of heat is retarded by both fibrous insulation of the heater, the plate and the battery as well as by a radiation reflecting metalic box which serves to support the heater on said battery and to contain said conductive plate, heater and insulation.

3,762,394

ELIMINATION OF COOKING ODORS

J. L. Newcomer, Trotwood, Ohio, assignor to Food Technology Inc., Dayton, Ohio

Filed Sept. 8, 1971, Ser. No. 178,629
Int. Cl. F24c *15/20*
U.S. Cl. 126—300 **19 Claims**



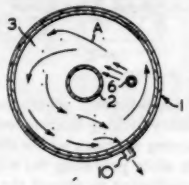
Cooking odors generated by the deep fat frying of potato chips or other food products are eliminated by directing the fumes back to the burner heating the cooking oil for incineration thereof. The flow of the fumes from the cooking process can be controlled to maintain the quantity of fumes no more than the amount of combustion air needed by the burner to insure that all of the fumes are incinerated. Additionally, condensers may be utilized to remove a substantial portion of the moisture carried by the fumes before they are incinerated.

3,762,395

DEVICE FOR PREVENTING SEDIMENT BUILD-UP IN GAS WATER HEATERS

Thomas B. Franklin Taylor, Islington, Ontario, Canada, assignor to Anthes Eastern Limited, Toronto, Ontario, Canada

Filed Feb. 25, 1971, Ser. No. 118,716
Claims priority, application Canada, Mar. 4, 1970, 076454
Int. Cl. F24h *1/00*
U.S. Cl. 126—350 R **7 Claims**



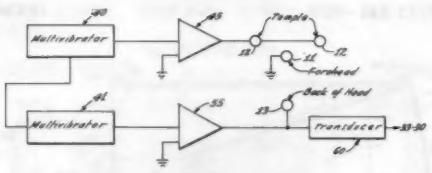
The invention relates to gas water heaters whereby, means on the inner end of the cold water inlet are arranged so that the jet of water issuing therefrom is directed tangentially with respect to the vertical axis of the tank to prevent a build-up of sediment on the bottom of the tank.

3,762,396

METHOD AND APPARATUS FOR INDUCING SLEEP BY APPLYING ELECTRICAL PULSES TO PLURAL PORTIONS OF THE HEAD

Earle W. Ballentine, 3641 Via Palomino, Palos Verdes Estate, Calif., and Bernard C. Gindes, 301 N. Carmelina, Los Angeles, Calif.

Filed Oct. 30, 1970, Ser. No. 85,586
Int. Cl. A61n *1/34*
U.S. Cl. 128—1 C **18 Claims**



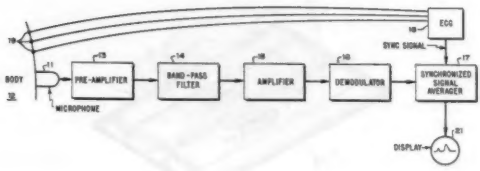
A method and apparatus for inducing sleep, treating psychosomatic disorders, and aiding the induction of hypnosis in a patient is disclosed in which electric current pulses are passed through the brainstem via electrodes attached to the back of the head and forehead. The electric current pulses have a frequency of 8 to 10 cycles per second. A second stimulus of electric current pulses having a frequency of four times the first stimulus is passed through the optic nerve via electrodes attached to the temples and forehead. A third auditory stimulus produced by the first electrical stimulus is applied to the ears via sound attenuating chambers in order to acoustically isolate the patient from a noisy environment. The three stimuli are preferably synchronized with each other. A novel electrode is disclosed which is attached to the back of the head protuberance where the hair would normally electrically insulate the electrode from the scalp. Means for filling the hair between the scalp and the electrode with a viscous hygroscopic electrolyte is described.

3,762,397

METHOD AND APPARATUS FOR THE DETECTION AND RECORDATION OF HIGH FREQUENCY SOUND IN THE CARDIOVASCULAR SYSTEM

John M. Cage, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 19, 1971, Ser. No. 135,350
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 S 9 Claims



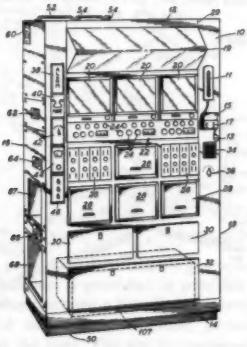
High frequency sound, such as that produced by turbulence, in the cardiovascular system is sensed, amplified, demodulated, and filtered to produce an average of the amplitude of the sound, the demodulated signal being synchronously averaged over a plurality of successive cycles of the heart to produce a clear signature trace of the demodulated sound, even in the presence of background noise.

3,762,398

MOBILE AND FLEXIBLE INTENSIVE CARE UNIT

John T. Schefke, 270 Lawton Rd., Riverside, Ill., and Algimantas K. Boktys, 3218 W. Marquette Rd., Chicago, Ill.

Filed Jan. 3, 1972, Ser. No. 215,028
Int. Cl. A61b 5/02, 5/04
U.S. Cl. 128—2 R 10 Claims



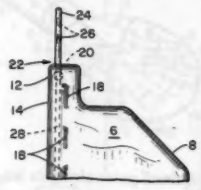
A flexible and self-contained instrumentation unit for intensive care in a hospital, said unit having packaged together monitoring services and ancillary services to support life of the patient undergoing intensive care. The instrumentation unit is of prescribed maximum width, depth and height for placement behind the bed of the patient, for movement in and out of the hospital room, and for conserving space. The unit has a front with monitoring screens, a terminal strip and accessible reporting and storage means on each side of the bed. The sides of the unit are provided with components to serve for the intensive care of the patient.

3,762,399

CATHETER BAG AND KIT THEREFOR

Edwin H. Riedell, 2621 Gordon, La Habra, Calif.

Filed June 22, 1972, Ser. No. 265,222
Int. Cl. A61m 3/00, 7/02, 25/00
U.S. Cl. 128—2 F 15 Claims



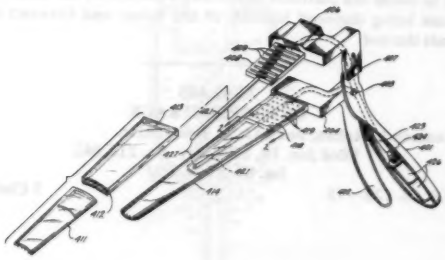
A catheter bag of unique design and construction which is ideally suitable for hospital use and easily adapted for ambulatory patient usage wherein the low cost of the catheter unit makes it readily disposable. Also, disclosed is a catherization kit utilizing the unique catheter bag wherein the kit contains all of the necessaries essential for effective catheterization in an assemblage which lends itself for usage, not only in hospitals, but convalescent homes, doctor's offices and other instances, where it is desired to relieve urinary distention or have the collection of a sterile urine specimen.

3,762,400

MEDICAL EXAMINING INSTRUMENT

Bernard McDonald, 18212 Pacific Coast Hwy., Malibu, Calif.

Filed Oct. 26, 1971, Ser. No. 192,390
Int. Cl. A61b 1/06
U.S. Cl. 128—18 6 Claims



A device for viewing the cervix and vaginal segment of a human uterus has a plurality of blades removably mounted on a holder. The blades are elongated transparent members and have an internal cavity closed near one end of the blade and open at the opposite end. The cavity is relatively wider in one direction and relatively narrower in another direction with the walls adjacent the narrower sides relatively weaker than the walls adjacent the wider sides.

3,762,401

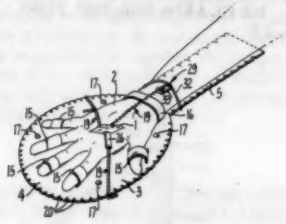
SURGICAL RETRACTOR

Jack William Tupper, 6 Lexford Road, Piedmont, Calif.

Filed Jan. 5, 1972, Ser. No. 215,585
Int. Cl. A61b 17/02
U.S. Cl. 128—20 1 Claim

A self-retaining retractor for use in hand surgery comprising a paddle-shaped pallet with notches around its periphery on which the hand is placed wound-side up, elastic bands for holding the fingers in place on the pallet and at least one flexi-

ble ball-and-link chain with a hook at one end which is hooked over the edge of the wound and which is fastened to the pallet



edge at a predetermined point along its length by inserting one of its links into one of the pallet notches, thereby holding the wound open.

3,762,402

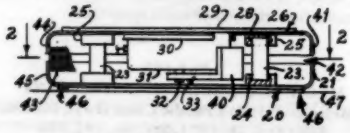
FOOT MASSAGING MACHINE

Stanley Abramovitz, 233 East 70th St., New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,417

Int. Cl. A61h *1/00*

U.S. Cl. 128—33 **4 Claims**



A motor hangs from a platform and extends downwardly towards a base which is connected to the platform by means of oscillatable supports. The motor rotates an eccentric mass so as to cause the platform to vibrate, a portion of the eccentric mass being disposed laterally of the motor and between the ends thereof.

3,762,403

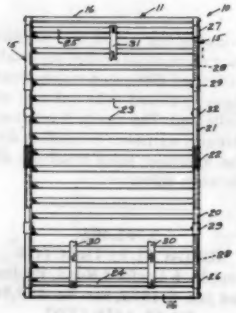
ORTHOPEDIC RACK

Kenneth A. Raban, Box 241, St. Johns, Ariz.

Filed Jan. 10, 1972, Ser. No. 216,362

Int. Cl. A61h *1/02*

U.S. Cl. 128—75 **5 Claims**



A traction device, in the form of a frame adapted to fit under a hospital matress, has head, chest and foot harnesses and is articulated for adjustment with the raising of the bed at the head or foot.

3,762,404

POSITIONING AID

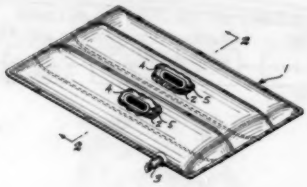
Tadao Sakita, Tokyo, Japan, assignor to Olympic Surgical Company, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 853,661, Aug. 28, 1969, abandoned. This application July 22, 1971, Ser. No. 165,146

Claims priority, application Japan, Aug. 21, 1969, 44/845545

Int. Cl. A61f *5/02*

U.S. Cl. 128—78 **16 Claims**



A positioning aid for restraining or immobilizing a part of the body of a medical patient comprising an air-tight bag of flexible, impervious material; a charge of elastically deformable spherulic beads of expanded polystyrene confined within the bag; and a self-closing valve communicating with the interior of said bag for evacuating air therefrom. Material proportions of the beads are of respectively different diameters. The bag is divided into a plurality of compartments by partitions extending obliquely between opposing walls of the bag. The partitions, which maintain the particles evenly distributed in the bag, are adapted to permit air-flow between the compartments and to prevent passage of the beads therebetween. When the positioning aid is evacuated after having been conformed to a portion of a patient's body, the aid becomes rigid while maintaining its pre-evacuation shape.

3,762,405

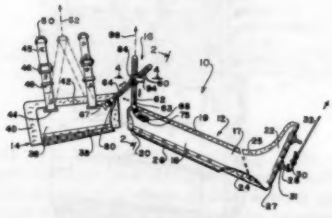
TRACTION SPLINT ASSEMBLY

Michael De George, 30 Colonial Dr., Box 836, Lake Ronkonkoma, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,715

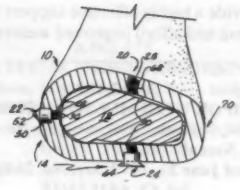
Int. Cl. A61f *5/04*

U.S. Cl. 128—84 C **6 Claims**



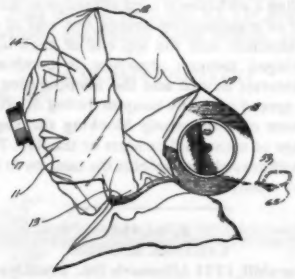
An orthopedic traction leg splint assembly is comprised of a forward L-shaped trough-like shell to support the calf, ankle and foot of a patient. A rear trough-like shell supports the patient's thigh. Both shells may be lined with a thick, resilient pad removably secured by an adhesive. The shells are joined by pairs of hinges including longitudinally pivotally connected slotted hinge bars, which may be adjusted to space the shells longitudinally and position them angularly. Straps removably attached to the rear shell and eyebolts on the forward can be secured to support traction ropes. The assembly can be supported by traction ropes, to insure full support of the splint and patient's leg.

3,762,406
SURGICAL CAST VENTING MEANS
Gertrude M. Wells, 110 West Main St., Hill City, Kans.
Filed Dec. 20, 1971, Ser. No. 209,704
Int. Cl. A61f *5/04*
U.S. Cl. 128—91 R 11 Claims



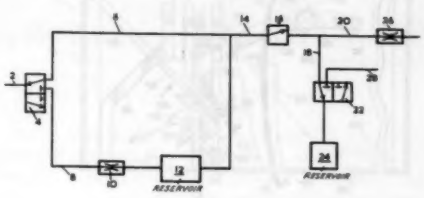
A cast vent has a conduit having an enlarged head. An inner positioner inserts in the opposite end. It has a cap, for the end of the conduit, and a flange. In use the vent is mounted in the wall of a surgical cast during make up with the head of the conduit positioned inside the cast. The flange is mounted on the outer end of the conduit, which is covered by the cap. The cap is replaced by a conduit flange when the cast is finished to provide communication from the inside of the cast to the atmosphere.

3,762,407
SURVIVAL SUPPORT DEVICE
David E. Shonerd, Santa Barbara, Calif., assignor to Lear Siegler, Inc., Anaheim, Calif.
Division of Ser. No. 141,781, May 10, 1971. This application Apr. 24, 1972, Ser. No. 247,107
Int. Cl. A61m *15/00*
U.S. Cl. 128—142.3 4 Claims



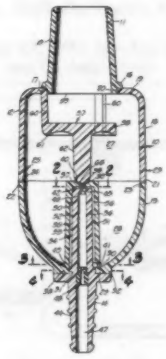
Apparatus for providing a breathable gas to an individual in an emergency situation is provided in practice of this invention. The apparatus contains a breathable mixture of gas for a prolonged period and, when actuated, provides about 10 minutes of gas to the user. The gas is contained at high pressure in a lightweight long tube coiled about a combined fill valve, pressure regulator, flow control, pressure gauge, and actuation mechanism. This assembly is in a canister and actuated by perforating a pressure containing diaphragm between the gas storage reservoir and the pressure regulator. The canister is connected to the back of a plastic hood that is fittable over a user's head so that the canister is arranged during use at the nape of the user's neck so as not to interfere with any emergency operations and, for example, to permit the user to wear a helmet or the like. Gas from the canister passes into the hood at a substantially constant rate and is vented as required through a check valve. An elastic band around the person's neck limits leakage.

3,762,408
VENTILATORS
Lawrence Alfred Cox, North Weald, and David James Dell, Eaton, Bray, both of England, assignors to The British Oxygen Company Limited, London, England
Filed Nov. 11, 1971, Ser. No. 197,709
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.8 7 Claims



A lung ventilator which can control the flow rate of gas supplied to a patient so as to produce an increasing flow pattern, a constant flow pattern, or a decreasing flow pattern. The change from one flow pattern to another is effected solely by switching appropriate valves in the gas flow circuit of the ventilator.

3,762,409
NEBULIZER
Victor E. Lester, P.O. Box 608, Sanora, Calif.
Filed Nov. 3, 1970, Ser. No. 86,525
Int. Cl. A61m *11/00*
U.S. Cl. 128—194 20 Claims

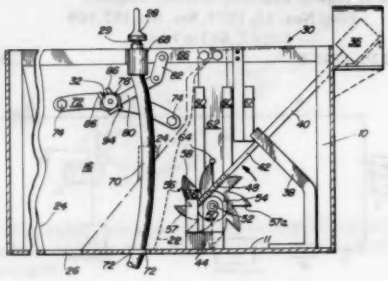


A disposable nebulizer device for producing aerosol includes an enclosed container having an aerosol outlet, a nozzle assembly extending into the container, and a diffuser-baffle assembly in the container. The nozzle assembly includes a gas nozzle and a spray nozzle with spaced and coaxially positioned orifices. The diffuser-baffle assembly is located in the spray path of the spray orifice and includes a nose portion which extends towards the orifices and is coaxially positioned therewith.

3,762,410
UNDULATING RECTAL FLUSHING APPARATUS
Paul H. Bindel, 3946 W. North Ave., Chicago, Ill.
Filed July 12, 1972, Ser. No. 270,976
Int. Cl. A61m *3/00*
U.S. Cl. 128—229 3 Claims

A method and an apparatus for the irrigation of the intestines and colon and the cleansing of the rectum of a person seated in a comfortable position on an apertured seat with an

undulating stream of warm water injected by an enema tip vertically reciprocating in and out of the rectum, allowing simultaneous intermittent discharge of waste products therefrom,

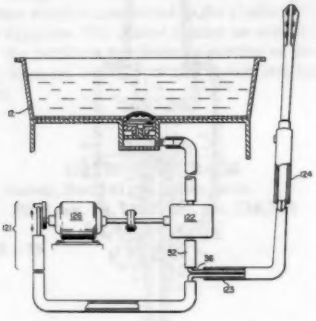


coupled with an oscillating nozzle for spraying the anal area of the patient with warm water and a waste pan for the disposal of the discharge therefrom.

3,762,411
POWER AERATED DOUCHE

William E. Lloyd; William J. Fuller, both of Fullerton; William S. Fuller, Buena Park, and William R. Hazen, Los Alamitos, all of Calif., assignors to Aqua Fem, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 132,769, April 9, 1971. This application Sept. 20, 1971, Ser. No. 181,750
Int. Cl. A61m *1/00*
U.S. Cl. 128—230 **5 Claims**



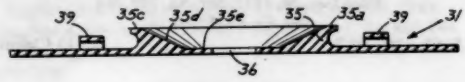
This specification discloses an electrically driven feminine hygiene appliance including a cover which also functions as a reservoir for a quantity of douching liquid, pumping apparatus for pressurizing air and the douching liquid, an electric motor for driving the pumping apparatus, a tube for conducting the pressurized liquid and air to a nozzle having lateral discharge ports, and a valve controlling the passage of the air and liquid to the nozzle. The invention delivers a mixture of air and douching liquid under a desired pressure to the discharge nozzle in the form of an aerated liquid.

3,762,412
DRAINAGE BAG HOLDER SHIELD AND METHOD

Mathilda C. Frank, 1800 E. 84th Ave., Denver, Colo.

Filed May 20, 1971, Ser. No. 145,386
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **9 Claims**

Reusable drainage bag holder shields are disclosed which have a novel generally oval-shaped configuration and are made of flexible molded materials which are resistant to body secretions and will not deform after extended body contact or

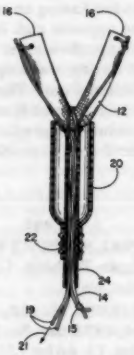


cleaning to provide a highly effective support for a removable-type drainage bag and afford improved wearer comfort.

3,762,413
TAMPON WITH MULTIPLE STRINGS

David E. Hanke, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed June 21, 1972, Ser. No. 264,741
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **10 Claims**

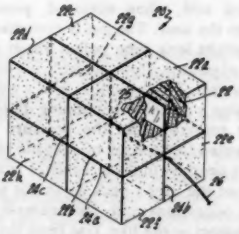


A tampon folded in a U-shape is equipped with multiple strings including a withdrawal cord affixed near the base of the U, and a pair of manipulating strings, one end of each of the latter being attached near the top end of each leg of the U. The multistringed tampon structure is combined with a telescoping inserter device and the manipulating strings are employed to spread open the tampon during or after insertion for the purpose of transversely blocking the vaginal cavity against leakage of menstrual exudate or the like. Traction applied to the withdrawal cord refolds the tampon to its initial U-shape for easy removal.

3,762,414
VAGINAL SPONGE

Michael S. Burnhill, 1111 Albemarle Rd., Brooklyn, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,589
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **1 Claim**



A vaginal sponge is disclosed as including a compressible, smooth surfaced, plastic sponge in the form of a solid rectan-

gle, a cylinder or a sphere. The sponge is divided into two or more sections by a plastic, latex or other rubber sheet or film which prevents fluid flow from one section of the sponge to the other. The sponge is used for dispensing medicaments and controlling the flow of menstrual blood or seminal fluid (contraception).

3,762,415

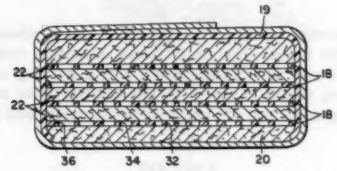
ANTI-BACTERIAL MENSES ABSORBING PADS

Willard L. Morrison, Winston-Salem, N.C., assignor to Maxine B. Money, Winston-Salem, N.C.

Filed Mar. 6, 1968, Ser. No. 710,925

Int. Cl. A61f *13/16*

U.S. Cl. 128—290 **6 Claims**



This invention relates to improved menses absorbing pads wherein a quantity of anti-bacterial material is included in the pad to reduce odor and the possibility of infection.

3,762,416

ARTERY ENTRY TOOL

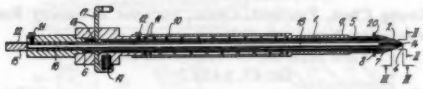
Edward Moss, Woodley, and Walter Warrick Wright Forbes, Reading, both of England, assignors to National Research Development Corporation, London, England

Filed May 26, 1971, Ser. No. 147,078

Claims priority, application Great Britain, June 3, 1970, 26,893/70

Int. Cl. A61b *17/32*, *17/34*

U.S. Cl. 128—305 **4 Claims**



A tool for providing an entry through a tissue wall, such as an artery, comprises an elongated member having a tapered end at which is provided a sharp edge for making an incision in the wall, this member being removably axially located in a tube with the tapered end projecting from one end of the tube, and the tube one end being tapered to meet the taper of the member and being provided with means for clamping the edge of the incision to the outside of the tube. The clamping action is preferably effected by urging a sleeve, located around the tube, against a re-entrant shoulder at the tapered end of the tube. Conveniently, the member is itself tubular with a rod axially movable therein to project at the relevant rod end a blade carried by the rod.

3,762,417

VASECTOMY FORCEPS

Brenton A. Textor, 106 Dory Rd. South, North Palm Beach, Fla.

Filed Dec. 8, 1971, Ser. No. 205,846

Int. Cl. A61b *17/28*

U.S. Cl. 128—321 **1 Claim**

Forceps for use in vasectomy operative techniques, characterized by blunt jaws to prevent puncturing of the scrotal skin and by the angular relationship of the jaws with respect to the longitudinal dimension of the forceps and with respect to each other.

3,762,418

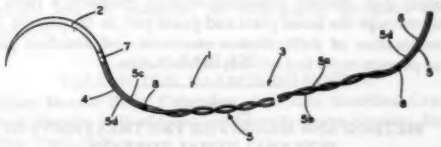
SURGICAL SUTURE

William G. Wasson, 3515 Darlington Ave., N.W., Canton, Ohio

Filed May 17, 1972, Ser. No. 253,983

Int. Cl. A61l *17/00*

U.S. Cl. 128—335.5 **8 Claims**



A surgical suture for ligating, tying or suturing two sutures simultaneously with a single maneuver. An eyeless needle is swaged to an end of a main suture section. The main suture section ends are fused portions of two separate strands of suture material. The separate strands form an intermediate portion of the main suture section between fused portions. Alternatively, the main suture section may have a plurality of intermediate separate suture strand portions connected to each other by fused portions. Marking bands are located at the junctions of the fused portions with the intermediate separate strand portions.

3,762,419

EYE DEVICE

Carley Baker Walters, 20 River Dunes Drive, Daytona Beach, Fla.

Filed Dec. 13, 1971, Ser. No. 207,034

Int. Cl. A61f *7/04*

U.S. Cl. 128—403 **1 Claim**

A therapeutic device for reducing capillaries in and around

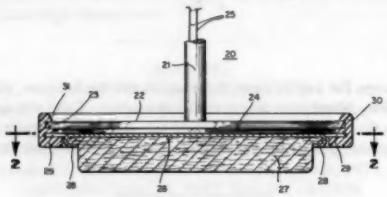
the eye areas by the application of ice or a very cold liquid in a flexible bladder that continuously conforms in shape to the

skin areas of the user while the ice of cold liquid absorbs heat from the skin areas.

3,762,420
DEFIBRILLATION ELECTRODE

Thomas W. Moore, Audubon; Frank Di Meo, Philadelphia, and Richard E. Collins, Media, all of Pa., assignors to Academic Associates, Inc., Audubon, Pa.

Filed June 3, 1971, Ser. No. 149,602
Int. Cl. A61n *1/04*
U.S. Cl. 128—417 **3 Claims**

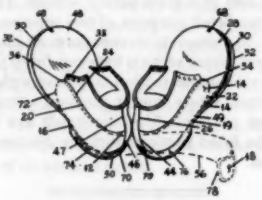


A defibrillation electrode having a handled metal electrode disc, to which is connected a gauze pad capable of holding a saline solution, the gauze pad and disc being held in an electrically connected state by an annular resilient holder ring. In the preferred embodiment, the gauze pad has a metal plate attached to one side thereof which is integrally connected to the holder ring. The metal plate is pressed against the electrode disc when the electrode disc is snapped into the resilient holder ring, thereby providing reliable conduction from the disc through the metal plate and gauze pad, to the patient. The combination of defibrillation electrode and attached gauze pad permits rapid and reliable defibrillation.

3,762,421
METHOD AND MEANS FOR THE TREATMENT OF INTERNAL TIBIAL TORSION

Sammie Sax, Sr., 1709 Ballard Dr., Huntsville, Ala.

Filed Nov. 1, 1971, Ser. No. 194,167
Int. Cl. A43b *7/24*
U.S. Cl. 128—583 **6 Claims**

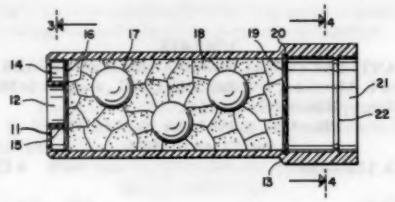


An assembly for treatment of internal tibial torsion comprising a pair of shoes having affixed to the outer side thereof strips of flexible material having interlocking surface elements and an elongated cover strip having a surface with coordinate locking elements adapted to extend over the strips on the shoes to lock the shoes at a predetermined angle with the heels of the shoes together.

3,762,422
FILTER FOR CIGARETTES

Mortimer Russell Dock, Arlington, Va., assignor to The H-2-O Filter Corporation, New York, N.Y.

Continuation of Ser. No. 046,747, June 16, 1970, abandoned. This application Nov. 17, 1971, Ser. No. 199,755
Int. Cl. A24b *15/02*; A24d *01/04*; A24f *07/04*
U.S. Cl. 131—10.1 **7 Claims**



This invention relates to a structure and combination of materials for the removal by filtration of certain combustion products carried in the smokestream of a burning cigarette, said filtering means being optionally attachable or integrally attached upon the end of a cigarette at the mouth end thereof.

3,762,423
METHYL TRANS-2-ISOPROPYL-5-METHYL-3-HEXENOATE AND DERIVATIVES THEREOF AS TOBACCO FLAVORANTS

Melvyn I. Simpson; Albert H. Warfield, and Andrew G. Kallianos, all of Durham, N.C., assignors to Liggett & Myers Incorporated, New York, N.Y.

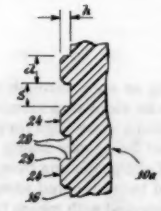
Continuation-in-part of Ser. No. 806,682, March 12, 1969, abandoned, and a continuation-in-part of Ser. No. 57,414, June 19, 1970, abandoned, and a continuation-in-part of Ser. No. 73,194, Sept. 17, 1970, abandoned, and a continuation-in-part of Ser. No. 153,900, June 16, 1971, Pat. No. 3,704,714. This application Sept. 7, 1972, Ser. No. 286,915
Int. Cl. A24b *15/00*
U.S. Cl. 131—17 R **9 Claims**

Methyl trans-2-isopropyl-5-methyl-3-hexenoate and certain of its derivatives such as the corresponding alcohol, aldehyde, or carboxylic acid enhance the flavor of the mainstream of cigarette smoke and are useful as flavorants for all modifications of tobacco and tobacco products.

3,762,424
HAIR ROLLER MEANS

Nai-Keung Chen, Fairfield, Conn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 20, 1971, Ser. No. 182,026
Int. Cl. A45d *2/12*
U.S. Cl. 132—33 R **5 Claims**



An improvement in heatable and moistenable hair rollers having end edges and a smooth outer surface. The roller provided has an outer surface provided with means, such as a plurality of protrusions, for increasing the outer surface area, and

thus the moisture retaining capacity of the roller. In addition, moisture guiding means are provided, such as a groove located adjacent each of the end edges, for preventing excess moisture on the rollers from overflowing the end edges and scalding the user's fingers. The invention may also include the provision of tapered end edges, to form rims for reducing the rate of dissipation of heat from the end edges of the roller.

3,762,425

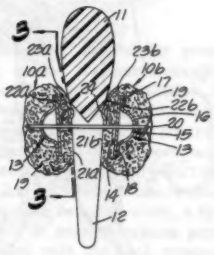
APPLICATOR AND COMB CLEANER ATTACHMENT

Edmund J. Loeffler, 1105 Green St., Glendale, Calif.

Filed Feb. 22, 1972, Ser. No. 228,056

Int. Cl. A45d *24/16*

U.S. Cl. 132—110 **5 Claims**



A removable unitary attachment for a comb in which parallel extending elongate structures are secured in back-to-back relation for receiving the comb teeth therebetween, the structures having a covering of cotton or other appropriate abosrbent material so that by simply running the comb through the hair, the material of the structures will serve to clean out oily hair sprays, cut-off hair, and the like, and upon detachment from the comb will clean the comb teeth.

3,762,426

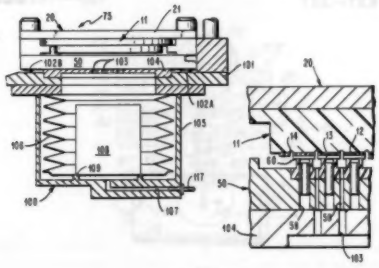
SEMICONDUCTOR CHIP SEPARATION APPARATUS

Carl Yakubowski, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1972, Ser. No. 247,530

Int. Cl. B08b *3/08*

U.S. Cl. 134—195 **16 Claims**



Disclosed is a method and apparatus for separating discrete chips of a diced semiconductor wafer without disturbing the orientation of the chips, the chips being bonded to a support or substrate from which they must be separated prior to use. The substrate is first positioned in a fixture so that the diced wafer assumes a predetermined orientation, and then a resilient foraminous pad is pressed against the chips, and a bond releasing fluid is urged, by a novel pump, through the pad until the chips are released from their support, the thickness of the removed bond being compensated for by expansion of the pad. Also disclosed is a fixture which acts as a convenient storage tray for the chips in their original orientation.

3,762,427

METHOD AND APPARATUS FOR MIXING PRESSURE GASES PARTICULARLY FOR RESPIRATORS AND MEDICAL APPARATUS

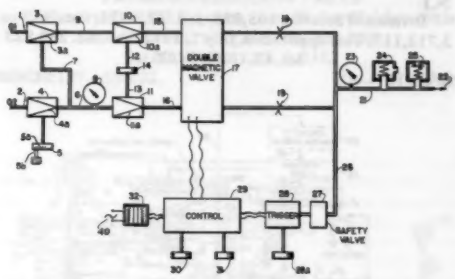
Karl F. Mollering, Lubeck, Germany, assignor to Dragerwerk Aktiengesellschaft, Lubeck, Germany

Filed June 29, 1970, Ser. No. 50,795

Claims priority, application Germany, July 1, 1969, P 19 33 266.2

Int. Cl. G05d *11/03*

U.S. Cl. 137—7 **9 Claims**



A method for mixing pressure gases includes directing the gases to be mixed through throttles into a mixing pipe while the gases are maintained under pressures which are adjustable in relation to the ratio of the desired gas mixture and while the sum of the gas pressures is constant and with each gas maintained at a pressure above the critical pressure of the gas. The apparatus for carrying out the method includes an adjustable pressure reducer in each gas line which expand the gases to pressures which are always in the same ratio to each other and additional pressure reducers, arranged in each line, which are interconnected in a manner such that an increase in the pressure at the discharge of one provides a corresponding decrease at the other, and vice versa, and which expand the gases to back pressures which are in the same mixing ratio to each other each at a pressure above the critical pressure and with the sum of the pressures being constant. The passage conduits for the gas also include throttles which discharge into a common line for example, for conducting the gases to a respirator.

3,762,428

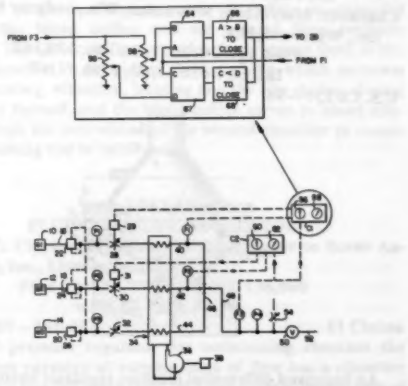
VOLUMETRIC GAS MIXING SYSTEM

William Donald Beck, Columbus, and Juan Hamilton Crawford, Dublin, both of Ohio, assignors to Ocean Systems, Inc., New York, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,744

Int. Cl. G05d *11/02*

U.S. Cl. 137—88 **3 Claims**



A system for mixing gases volumetrically by comparing relative flows between the constituent gases and the combined

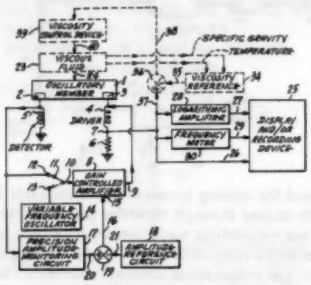
total gas flow. A signal is supplied to a regulator valve in line with the constituent gas flow conduit to vary the amount of flow therein until the correct proportion is established. The total gas flow is not maintained constant.

3,762,429

HIGH PRECISION WIDE DYNAMIC RANGE VISCOUS LOSS MEASURING APPARATUS

J. Vincent Fitzgerald, Metuchen; Frank J. Matusik, and Hans R. Oppliger, both of Piscataway, all of N.J., assignors to National Metal and Refining Company, Inc., Edison, N.J.

Division of Ser. No. 105,833, Jan. 12, 1971, Pat. No. 3,712,117. This application July 7, 1972, Ser. No. 269,823
Int. Cl. G05d *24/00*
U.S. Cl. 137—92 5 Claims



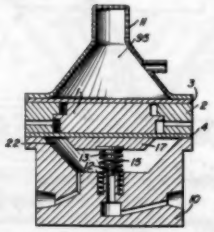
A viscosity measuring system especially useful to pollution and chemical process control applications. A variable gain amplifier drives a magnetic coil which causes a torsion member to oscillate. The amplitude of the oscillations is sensed by a transducer, and converted to a DC voltage by an amplitude monitoring circuit. The DC voltage, which represents the instantaneous amplitude of mechanical oscillation, is compared to a reference DC voltage which represents the desired amplitude of oscillation. The resulting error signal is utilized to control the gain of the amplifier in such a manner that the amplitude of mechanical oscillation is maintained constant and equal to the desired amplitude. The viscosity of the fluid in which the torsion member is immersed is obtained by providing an output signal which is a measure of the power provided by the amplifier to the magnetic coil in order to maintain the desired constant amplitude of oscillation. Preferably, the output signal is obtained from the voltage developed across a resistor in series with the magnetic coil.

3,762,430

DIFFERENTIAL PRESSURE REGULATOR

Charles D. Maercklein, Milwaukee, Wis., assignor to Isotopes, Inc., Westwood, N.J.

Filed Apr. 30, 1971, Ser. No. 139,162
Int. Cl. G05d *11/02*; F16k *31/45*
U.S. Cl. 137—98 9 Claims



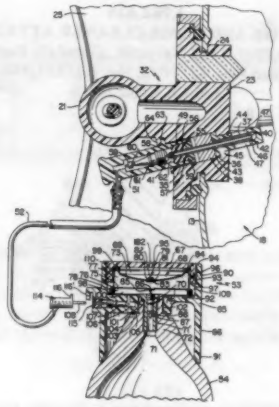
An improved differential pressure regulator having two continuous, hole-free diaphragms provided with a solid plug which is located between the diaphragms and is capable of moving with the movement of the diaphragms.

3,762,431

PRESSURE REGULATOR CONSTRUCTION AND SYSTEM UTILIZING THE SAME

Calvin L. Wilson, and John H. Fox, Jr., Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Dec. 29, 1971, Ser. No. 213,701
Int. Cl. F16k *17/06*
U.S. Cl. 137—116.3 25 Claims



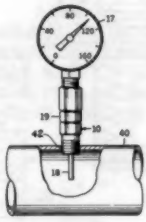
A pressure regulator construction for directing a propellant from a propellant source bottle into a fluid dispensing container, the pressure regulator construction having two housing members secured together to respectively engage and seal against opposed ends of a condition responsive element that controls a valve unit for the propellant source bottle. Such regulator construction can supply a manifold so that a plurality of fluid dispensing containers can be interconnected to the manifold, some of the fluid dispensing containers being interconnected to the manifold by other pressure regulator constructions.

3,762,432

TEST PLUG

Charles D. Peterson, Jr., Richardson, Tex.

Filed Mar. 29, 1971, Ser. No. 128,970
Int. Cl. B23b *41/08*; F16e *41/04*
U.S. Cl. 137—317 6 Claims



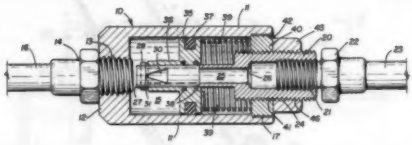
A pressure test plug for use with high pressure systems to sense the pressure or temperature by means of a test probe. The test probe is connected either to a pressure gauge, thermometer or other sensing device and is received within a resilient core member in a pressure plug. The resilient core member is of a special probe passage construction which receives the test probe in a slit through the core passing through an intermediate valve pocket. The slit on the top side of the valve pocket is held together by the resilient nature of the core while the bottom of the valve pocket has an opening that is compressed against the probe when it is passed through it. Further sealing protection is provided by the valve pocket construction of a tapered conical configuration.

3,762,433

AUTOMATIC FLUID FLOW CONTROL FOR PRESSURE ACTUATED DEVICES

Robert M. Moore, 4695 S. Jason St., Englewood, Colo.

Filed July 26, 1972, Ser. No. 275,226
Int. Cl. G05d 7/01
U.S. Cl. 137—469 7 Claims



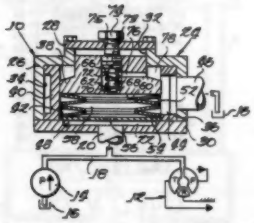
An automatic fluid flow control for pressure actuated devices comprising means for automatically maintaining selected predetermined speeds of operation in response to variations in back pressure produced in the control by varying loads imposed on the work to which the control is operatively connected. The control is installed in a pressure fluid condiut between a fluid source and the work to be actuated thereby. It comprises a housing having a back pressure chamber communicating with the pressure actuated work, a tubular fluid intake member movable in axial directions provided with an opening communicating with the back pressure chamber, a piston and sleeve slidably mounted on the intake member covering the opening to varying degrees, an adjustment member for adjusting the position of the intake member in the housing, and a spring bearing on the adjustment member and the piston, whereby variations in load imposed on the work produce back pressure in the chamber and automatic movement of the piston and sleeve to vary the size of the opening and passage of pressure fluid therethrough to the work to maintain uniform selected predetermined speed of operation of the work.

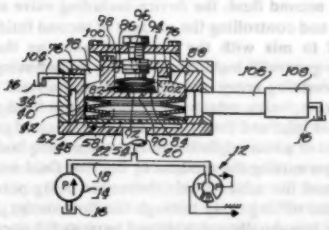
3,762,434

PILOT OPERATED BELLEVILLE RELIEF VALVE

Thomas E. Allen, Mustang, Okla., and James L. Schmitt, Washington, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 14, 1972, Ser. No. 271,791
Int. Cl. F16k 31/12, 31/36
U.S. Cl. 137—489 16 Claims





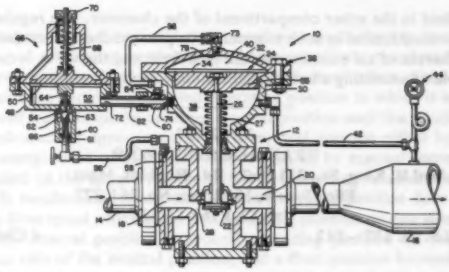
A pilot-operated Belleville relief valve comprises a plurality of conically shaped spring washers arranged in a bore of a housing against an annular valve member exposed to flow from an inlet, a control chamber defined by the washers and valve member, and an orifice in the valve member communicating with the control chamber to provide a pressure differential which opens a primary relief outlet path from the relief valve, and a pilot relief valve in fluid communication with the control chamber and responsive to a predetermined pressure to control the valve member to provide a substantially linear pressure relief for a broad flow range.

3,762,435

PRESSURE REDUCING VALVE

Jay P. Auwerter, 18502 Syracuse Ave., Shaker Heights, Ohio

Filed Apr. 12, 1972, Ser. No. 243,245
Int. Cl. F16k 31/38, 31/363
U.S. Cl. 137—505.22 10 Claims



A steam loaded pressure reducing valve arrangement is disclosed which includes a main valve connected in a steam flow line and operable to reduce the pressure of steam from one value upstream of the valve to a lower value to be maintained downstream of the valve. The main valve is fluid pressure operated and includes first and second fluid pressure chambers on opposite sides of a diaphragm which is interconnected with a valve element to move the valve element between open and closed positions in response to diaphragm actuation. The first fluid chamber is interconnected with low pressure fluid from the downstream side of the valve, and the second fluid chamber is interconnected with fluid under pressure from the upstream side of the valve. A pressure controlling diaphragm loading valve is interconnected between the upstream side of the main valve and the second fluid chamber to reduce the pressure of the upstream fluid to a constant control pressure which is introduced into the second fluid chamber to bias the main valve toward the open position thereof. A condensate bleed orifice is provided between the loading valve and the first fluid pressure chamber, and an orifice is provided between the bleed orifice and the second fluid pressure chamber. The latter orifice provides for trapping fluid in the second chamber to provide a fluid cushion which prevents valve slamming, vibration, hunting and the like during closing movement thereof, and the bleed orifice serves to bleed condensate from the area ahead of the second chamber to assure that cushioning can be achieved.

3,762,436

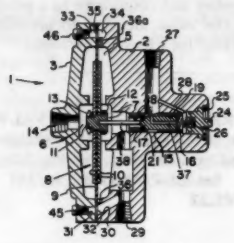
FLUID PRESSURE REGULATOR

Robert W. Clayton, Plymouth, Mich., assignor to Scans Associates, Inc., Livonia, Mich.

Filed Apr. 30, 1971, Ser. No. 138,960
Int. Cl. F16k 31/12
U.S. Cl. 137—505.35 11 Claims

A fluid pressure regulator for maintaining constant the downstream pressure at varying rates of flow has a chamber divided by a flexible diaphragm into two compartments one of which has an inlet and an outlet through which a first pressure

fluid may flow under the control of a flow control valve, the position of the valve being determined by the position of the diaphragm and the position of the diaphragm being determined by the relative pressures of the first fluid and a second



fluid in the other compartment of the chamber. The regulator is constructed in such manner as to prevent the accumulation therein of air entrained in the first fluid and the valve is capable of providing a bubble-tight shutoff for the regulator.

3,762,437

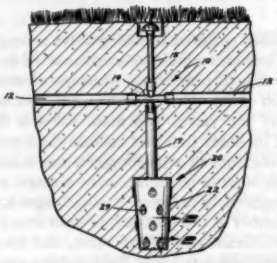
DRAINAGE RESERVOIR

Lloyd H. King, Sr., 311 Blake Rd., Hopkins, Minn.

Filed June 9, 1972, Ser. No. 261,277

Int. Cl. F16k *15/03*

U.S. Cl. 137—512 **4 Claims**



A drainage reservoir for an underground watering systen consisting of a sump substantially frusto conical in form having a plurality of apertures therein, said apertures comprising drainage valves which include valve members in connection with each of said apertures which yield to the pressure of water within said reservoir to open said apertures for passage of said water through said apertures and which yield to subsurface water pressures to close said apertures against the entrance of subsurface waters into said reservoir.

3,762,438

PRESSURE BALANCED CONNECTION

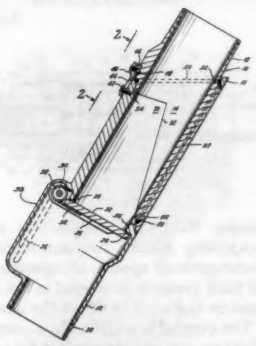
Mason R. Litchfield, Houston, Tex., assignor to B & L Machine Company, Incorporated, Houston, Tex.

Filed Feb. 18, 1971, Ser. No. 116,568

Int. Cl. F16k *15/03*

U.S. Cl. 137—515.5 **8 Claims**

Tubular members are connected by telescopically inserting cylindrical pin end of one member into first opening in cylindrical socket end of other member, with a first O-ring seal around pin between pin and socket. Socket has a second opening to medium exterior to members. A second seal between the members encompasses the second opening. The flow path through the connection includes a first flow passage through the first seal and a second flow passage between the seals. The areas encompassed by the seals projected onto a plane perpendicular to the telescopic axis are equal, whereby forces on the connection due to internal pressure are balanced with respect to separation of the connection. The axes of the tubular members are inclined relative to the pin and socket axis so that the tubular members are coaxial or angularly disposed as



desired. The balance of pressure enables simple means to be used for holding the members together mechanically, and for the same reason the connection can be made of aluminum or plastics or other low strength materials. A full opening flapper check valve is incorporated in one of the tubular members.

3,762,439

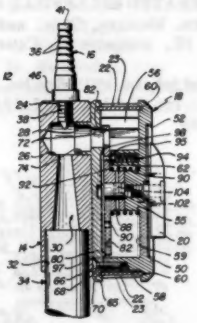
FLUID MIXING VALVE ASSEMBLY

Walter Heath, Chicago, Ill., assignor to Parkland International Inc., Melrose Park, Ill.

Filed Dec. 6, 1971, Ser. No. 205,204

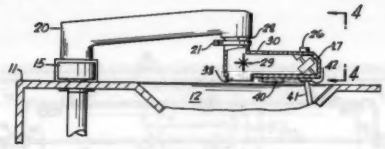
Int. Cl. F16k *19/00*

U.S. Cl. 137—549 **4 Claims**



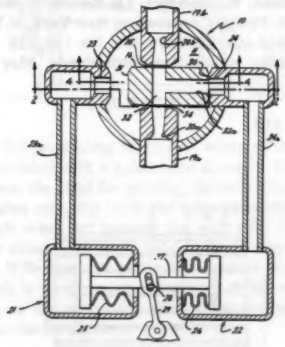
There is disclosed a mixing device for mixing a first fluid with a second fluid, the device including valve means for metering and controlling the amount of second fluid which is permitted to mix with the first fluid entering the device, the device generally including a mixing body having a fluid inlet for permitting entry of a first fluid, and a fluid outlet spaced therefrom, valve means interposed in the fluid path between the fluid inlet and fluid outlet for metering and controlling the amount of a second fluid entering the mixing body, the mixing body permitting the mixture of the first fluid with the second fluid, and the mixed fluids thereafter being permitted to exit from the mixing body through the fluid outlet. The valve assembly is manually operable and permits the operator to select the desired valve opening thereby to meter and control the amount of second fluid entering the mixing device.

3,762,440
METERED WATER FAUCET
Robert Bryant, 8111 Golden's Forest, San Antonio, Tex.
Filed Dec. 21, 1971, Ser. No. 210,317
Int. Cl. F16k *37/00*; G01f *3/00*
U.S. Cl. 137—551 1 Claim



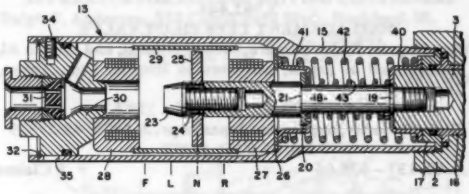
A water faucet adaptable for use in a kitchen sink, with meter means to measure the water flow, together with digital indicating means to indicate the volume of the total flow, and a reset mechanism to set the indicator to the zero start position. An alternate embodiment of the invention is an attachable unit containing the meter and the indicating means, said unit being adaptable to be clamped on the orifice of a conventional faucet.

3,762,441
JET COUPLED FOUR-WAY VALVE
Warren F. Kaufman, Santa Ana, Calif., assignor to Philco-Ford Corporation, Philadelphia, Pa.
Filed Aug. 20, 1971, Ser. No. 173,477
Int. Cl. F16k *11/00*
U.S. Cl. 137—597 12 Claims



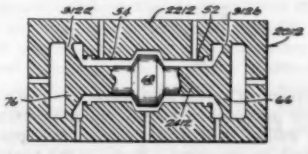
A pneumatic switching valve comprising a flexure-mounted armature, or "flapper", which is cycled under solenoid control, against a pair of orifices each of which controls a gas outlet port leading to a mechanical actuator. The flapper moves in a plane transverse the path of fluid supplied by two, confronting, supersonic jets, and passages in the flapper permit jet-derived fluid to flow toward one or the other of the actuators depending upon the position of the flapper with respect to the exit ports, as determined by the solenoids. A gap is provided between the flapper passages and the jet inlet nozzles, and serves as a bleed port affording automatic pressure relief.

3,762,442
DIRECTIONAL CONTROL VALVE WITH PORTATIVE ELECTROMAGNETIC LATCH MECHANISM
John C. Paul, W. Richmond Heights, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Jan. 14, 1972, Ser. No. 217,734
Int. Cl. F16k *11/07*; F16f *1/06*; F16k *31/00*
U.S. Cl. 137—625.2 8 Claims



A spool type directional control valve characterized in that one end of a spring-centered spool has operatively connected thereto a portative electromagnetic latch mechanism which retains the spool in a selected operating position to which it is moved from its spring-centered neutral position until the spool is released for spring movement to neutral position either by de-energization of said latch mechanism or by manual force applied on the spool overcoming the net retaining force of the latch mechanism. In connection with a three-position four-way float spool which has a first operating position on one side of the neutral position, a second operating position on the other side of the neutral position, and a float position beyond said second operating position, and which has an electromagnetic latching mechanism to latch the spool at said first and float positions, the spring-centering mechanism comprises two preloaded springs both of which are additionally compressed in moving the spool from neutral position to the first position and only one of which is additionally compressed when the spool is moved from neutral position to the second position and both of which springs are additionally compressed in moving the spool from the second position to the float position whereby the spring return forces are approximately balanced at the first position and the float position and additionally the preload of the spring which is not additionally compressed at said second position provides a sensory position indicator to indicate the movement of the spool from neutral position to the second position. Accordingly, when the spool is released by manual force from its latched first or float positions, the manual forces are approximately equal whether the spool is to be released from the first position or from the float position.

3,762,443
RESILIENT FLUID CONTROL VALVE
Gerald T. Sorenson, Hartland, Wis., assignor to Tektro Inc., Milwaukee, Wis.
Division of Ser. No. 668,862, Sept. 19, 1967, Pat. No. 3,587,156. This application May 26, 1970, Ser. No. 48,699
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.27 8 Claims



A valve for controlling the flow of pressurized fluid having a valve body including a plurality of fluid entrance and emission

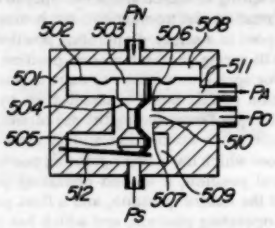
ports opening into a confined cavity. A valve spool is held captive in the cavity and is movable therein to control the flow of fluid selectively through the ports and the cavity. At least one of the valve members is constructed of resilient material. Such use of resilient material not only results in a unique valve structure but also permits production thereof by a unique method wherein either the valve body or the valve spool is deformed for the assembly of parts.

3,762,444

DISPLACEMENT TYPE PILOT VALVE

Takeo Nagata; Ichiro Kimura, both of Hitachi, and Mitsuo Ai, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 30, 1971, Ser. No. 129,531
Claims priority, application Japan, Apr. 3, 1970, 45/27839
Int. Cl. F16k 11/07
U.S. Cl. 137—625.66 **9 Claims**



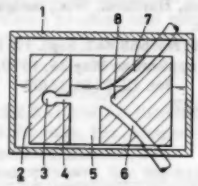
A displacement type pilot valve in which an exhaust valve and an air supply valve are both enabled free to get into and out of an output pressure chamber, thereby improving the response performance of the valve rod provided on its opposite ends with said exhaust valve and air supply valve.

3,762,445

FLUIDIC DEVICE

Toyoki Orita, and Yoshiaki Hara, both of Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Nov. 29, 1971, Ser. No. 202,772
Int. Cl. F15c 1/04
U.S. Cl. 137—806 **4 Claims**



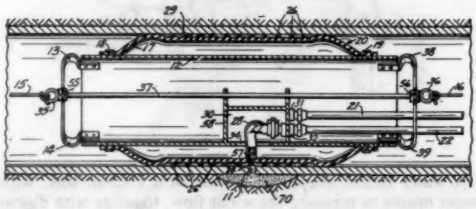
A fluidic element having a jet nozzle in a side wall of a central chamber provided in the element and outlets in the opposite side wall of the central chamber is disposed within a container and, by supplying a liquid to the container, a gas-liquid boundary face is formed in the central chamber. The boundary face is adjusted in accordance with the amount of the liquid supplied and the direction of a jet from the jet nozzle is controlled by said boundary face.

3,762,446

METHOD AND DEVICE FOR INTERNALLY LOCATING AND SEALING PIPELINE LEAKS

Barry F. Tungseth; Donald E. Olson, and Louis J. Skriba, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 8, 1970, Ser. No. 96,089
Int. Cl. F16l 55/18
U.S. Cl. 138—97 **3 Claims**



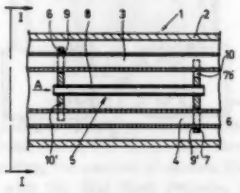
A method and a device for internally locating leaks in a pipeline and sealing the leak without interrupting the normal use of the pipe. The device has a tubular rigid body which is open at both ends and is covered on the outside by an inflatable sleeve which can be pressurized to seal off a liquid-tight cavity between the pipe wall and the sleeve surface. The pipe is tested for leaks by pressurizing the cavity with a test liquid and thereafter observing the pressure drop to determine if a leak is present. If a leak is discovered, a settable liquid sealant is forced into the cavity filling the leak.

3,762,447

COLD-TRANSPORTING APPARATUS

Johannes Holland, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 22, 1971, Ser. No. 136,410
Claims priority, application Netherlands, May 25, 1970, 7007560
Int. Cl. F16l 9/18
U.S. Cl. 138—113 **6 Claims**



A cold-transporting apparatus comprises a system of ducts including an outer tube having within it a first tube through which flows cold-transporting medium of a lower temperature, and a second tube through which flows cold-transporting medium of a higher temperature. Spacing elements are present between these tubes, these elements being transverse to the axial direction of the tubes and connected together via an elongate connection element of low-thermal conductivity.

3,762,448

THICK WALLED PRESSURE VESSEL

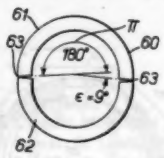
John Donohue, Howell, N.Y., assignor to Struthers Scientific and International Corporation, New York, N.Y.

Division of Ser. No. 691,090, Nov. 22, 1967, abandoned. This application Oct. 13, 1970, Ser. No. 80,511

Claims priority, application Great Britain, Nov. 24, 1966, 52,653/66; Jan. 20, 1967, 3,178/67

Int. Cl. B23p *11/02*

U.S. Cl. 138—171 4 Claims



A thick walled pressure vessel having a tubular wall is prestressed by bending to resist extreme external pressures, the bending being applied by the external pressure being resisted. The tubular or cylindrical wall contains internal axial cuts which divide the wall into axial sectors with faying surfaces therebetween so that the application of external pressure decreases the curvature of the sectors to prestress them.

3,762,449

LOOM

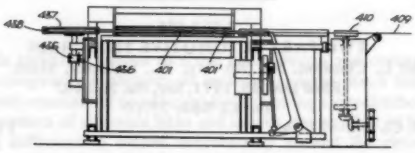
Friedrich Walter Eilhauer, Berlin, and Ernst Walter Krug, Hassel, both of Germany, assignors to Emil Jager K.G., Munster, Dahlweg, Germany

Filed May 12, 1971, Ser. No. 143,675

Claims priority, application Germany, May 30, 1970, P 20 26 604.0

Int. Cl. D03d *47/12*

U.S. Cl. 139—127 9 Claims



A loom for producing fabrics of wires of metal or plastic which is provided with a guide tube movable from one side of the loom into the shed for guiding the weft wire or with a pair of guide tubes movable from the opposite sides into the loom toward each other for passing the weft wire from one guide tube to the other. The guide tube or tubes may be either rigid or flexible. If flexible, the guide tube may be wound on or off a wheel which is partly surrounded by a guide which holds the guide tube on the wheel and also guides the guide tube from the wheel in the direction of the weft.

3,762,450

ECOLOGICAL HANDLING OF VOLATILE LIQUIDS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company, Los Angeles, Calif.

Filed July 29, 1971, Ser. No. 167,494

Int. Cl. B65b *37/20*; B67c *3/30*; B67d *5/06*

U.S. Cl. 141—5 10 Claims

A method is disclosed for reducing the emission of volatile constituents from vessels being filled with a liquid solution containing the volatile constituent. In the method, the vessel is initially purged with a condensable vapor to displace any noncondensable gases in the vapor space of the vessel and thereafter while filling the vessel with the liquid solution introducing additional amounts of the vapor into the vapor space at a rate sufficient to prevent the pressure differential between the interior and exterior of the vessel from exceeding the vessel safety limits. The condensable vapor is capable of condensing at temperature and pressure conditions existent within the vessel during filling.

3,762,451

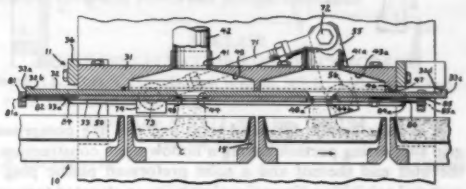
APPARATUS FOR FILLING MOVING CONTAINERS

Ralph F. Anderson, 332 Calvin Park Blvd., Rockford, Ill.

Filed Nov. 19, 1971, Ser. No. 200,441

Int. Cl. B65b *1/04*, *39/14*, *43/52*

U.S. Cl. 141—186 20 Claims



An apparatus for dispensing a fluent product into moving containers in which the product is supplied to a stationary head overlying the containers and valve members are mounted on the stationary head for reciprocatory movement relative thereto in a direction paralleling the direction of movement of the conveyor, the valve members having ports therein and a valve operating mechanism for moving the valve members in a forward stroke with the ports in register to dispense product into a moving container and in a return stroke with the ports out of registry to interrupt dispensing of product during the return stroke.

3,762,452

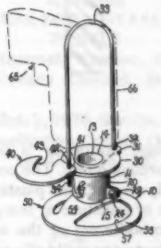
ATTACHMENT FOR A HAND TOOL

Ronald Lee Bernald, Sacramento, Calif., assignor to Peter Schmall, Fresno, Calif.

Filed Jan. 7, 1972, Ser. No. 216,090

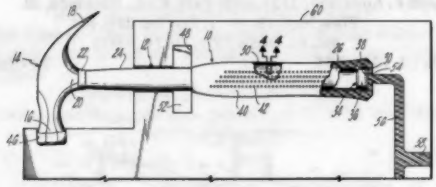
Int. Cl. B27c *5/10*

U.S. Cl. 144—134 D 3 Claims



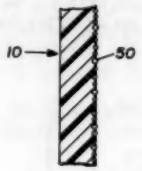
An attachment for converting a powered drill into a router, which drill has a chuck adapted to receive a bit providing a router blade and intended for use on a workpiece, and the attachment has a housing with a platform at one end thereof providing a passage extending through the housing; a yoke for adjustably securing the drill on the platform with the chuck extending through the passage; a guide having a sleeve slidably positionable in the passage about the chuck; and a workpiece contact ring coextensive with the guide remote from the sleeve and positionable therewith to control the depth of penetration within the workpiece of the router blade by selective positioning of the guide and attached contact ring.

3,762,453
HAND TOOL HANDLE
George W. Merrow, Bloomfield; Robert F. West, West Simsbury, both of Conn.; Carl E. Eliason, Warwick, R.I., and Joseph J. Guarnaccia, Wethersfield, Conn., assignors to The Stanley Works, New Britain, Conn.
Filed May 12, 1971, Ser. No. 142,625
Int. Cl. B25g *1/10*
U.S. Cl. 145—61 C 6 Claims



A tubular handle for hand tools and the like comprises a grip supporting portion having a hollow open construction at the butt end thereof and a solid preformed plastic plug of material exhibiting dimensional stability at elevated temperatures secured in the open end by a firm pressure fit therewith. A hand cushion grip is molded directly onto the handle and securely conforms to the grip supporting portion and plastic plug, fully encasing both members. The sealed mold utilized in molding the grip contains a multiplicity of perforation-producing pins having individual gas vents associated therewith, the pins and vents being spaced along the longitudinal extent of the mold cavity.

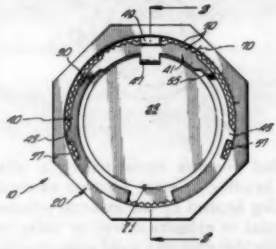
3,762,454
DISPOSABLE GARBAGE CONTAINER
Roy A. Wilkins, Jr., 806 Red Oak Ln., Arlington, Tex.
Filed Nov. 15, 1971, Ser. No. 198,575
Int. Cl. B65f *1/14*; B32b *5/16*
U.S. Cl. 150—1 15 Claims



A disposable garbage container is provided which will degrade in situ in a garbage dump. The container is made of a plastic film, e.g., a polyvinyl alcohol plastic film which will dissolve in the presence of moisture at temperatures of at least about 100°F. One embodiment of the invention includes a degradable garbage container made of a plastic sheet material which comprises a laminate or a mixture of cold water soluble polyvinyl alcohol and hot water soluble polyvinyl alcohol.

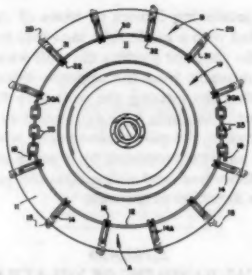
3,762,455
LOCK NUT
Raymond B. Anderson, Jr., Pasadena, Calif., assignor to Ceromet, Inc., Industry, Calif.
Filed Nov. 26, 1971, Ser. No. 202,167
Int. Cl. F16b *39/10*
U.S. Cl. 151—28 6 Claims

A lock nut assembly is disclosed in which a lock ring is adapted to be disposed and secured within an undercut cavity formed in the main body of the lock nut. The cavity is formed by a bottom transverse wall, a peripheral side wall extending upwardly therefrom, and an upper transverse wall. An annular set of teeth is mounted about the periphery of the lower portion of the sidewall adjacent the bottom wall. The space between the teeth and the upper transverse wall forms an undercut groove. The lock ring comprises a split ring having a central portion and a pair of leg portions extending outwardly therefrom. The central portion includes an inwardly extending key, an outwardly extending projection, and a pair of sectors having a plurality of teeth formed on the periphery thereof. The key is adapted to extend into a longitudinal keyway formed on an axle, shaft or like element to lock the ring



against rotation with respect to the element. The projection is adapted to extend into the undercut groove while the teeth of the sectors are adapted to engage a portion of the teeth formed in the cavity to lock the ring against rotation with the nut. The central portion of the ring is secured in position by the legs of the lock ring extending into the undercut groove. Besides being biased outwardly to engage the sidewall of the undercut groove, the lock ring legs are biased in the axial direction to cause the upper surface of the legs to be biased against the upper wall and the central portion of the ring to be biased against the bottom surface of the cavity, thereby ensuring that the lock ring remains secure and in contact with the teeth in the cavity without becoming dislodged.

3,762,456
TWO-PART AUTOMOTIVE TIRE CHAIN
John L. Clouston, 504 9th Ave. W., Kalispell, Mont.
Filed Dec. 15, 1971, Ser. No. 208,187
Int. Cl. B60c *27/10*
U.S. Cl. 152—213 A 1 Claim



A tire chain comprising two separate parts with each of said parts including a semi-rigid wire member of substantially semi-circular shape for placement against the inside sidewall of the tire. The wire member of the first chain part terminating in hooked end portions for the adjustable reception of chain lengths carried at the ends of the remaining wire member of the other chain part. Swingably affixed to the wire members are the ends of cross chain segments disposed in an evenly spaced manner along both of said wire members with the cross

chains extending over the tire tread. Extending along the outer sidewall of the tire are semi-circular lengths of tire chain which coact to secure the outer ends of the cross chain segments firmly about the tire tread. An elastic cord is temporarily engageable with the ends of the first mounted chain part and with the wheel rim to retain said chain part in place during partial wheel rotation whereupon the remaining chain part is applied. Attachment of the two chain parts on the inner side of the wheel assembly is greatly facilitated by the simple engagement of a chain link over a stationary hooked end of a semi-circular wire member. The elastic cord may be reapplied intermediate the chains parts in the manner of a chain tightener.

3,762,457

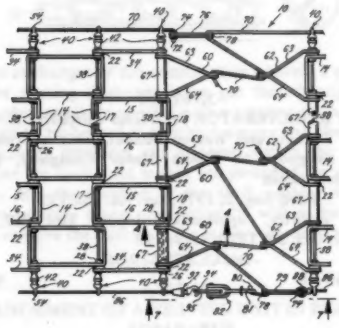
TIRE CHAIN ASSEMBLY

Clyde A. Guethle, 2339 Dawes, St. Louis, Mo.

Filed Nov. 8, 1971, Ser. No. 196,565

Int. Cl. B60c 27/20

U.S. Cl. 152—239 **14 Claims**



This invention relates to a tire chain design and construction comprising a plurality of rectangular links. Each link is pivotally connected to adjacent links forming a checkerboard type pattern of alternate links and spaces, the number of links being sufficient to extend substantially around the circumference of the tire and at least the width of the tire tread. The pivotal connections between the links comprise bushing means associated with each pivotal connection such that the bushing means define distinct rows, each bushing means having a hole therethrough in axial alignment with the holes of the other bushing means in its row. A cable extends through the holes in each row of bushings, and terminal means are fastened to the ends of each of the cables for holding the links in said pattern. Means are also provided for securing the chain assembly around the tire.

3,762,458

PNEUMATIC TIRE HAVING A GLASS CORD BREAKER LAYER

Tomonori Yoshida; Hirohiko Takagi; Katsuyuki Harakon, all of Tokyo, and Norio Matsui, Tokorozawa, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

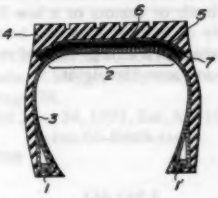
Filed Nov. 22, 1971, Ser. No. 200,883

Claims priority, application Japan, Nov. 27, 1970, 45/104393

Int. Cl. B60c 9/18

U.S. Cl. 152—361 R **5 Claims**

A pneumatic tire having a breaker layer composed of a rubber coated glass cord layer and short cut fiber reinforced rubber layers arranged on both sides of the glass cord layer in



the form a sandwich. This tire has an improved abrasion resistance, cornering power and plunger resistance.

3,762,459

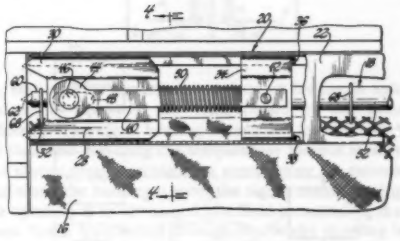
QUICK INSTALLATION FIREPLACE SCREEN

Hershel L. Stuart, Huntington Woods, Mich., assignor to Federal's, Inc., Southfield, Mich.

Filed Aug. 5, 1971, Ser. No. 169,194

Int. Cl. E06b 9/00

U.S. Cl. 160—19 **2 Claims**



An easily installed fireplace screen support and face bar assembly. Both the screen support rod and face bar are spring biased between the opposite side walls of the fireplace opening. The face bar assembly comprises a channel member forming the face bar, a lock plate anchored in the channel, a toothed insert slidably disposed in the channel and a spring arrangement disposed between the lock plate and insert to urge the insert outwardly against the side wall.

3,762,460

BOTTOM EDGE SEAL FOR MOVABLE SPACE DIVIDER PANELS

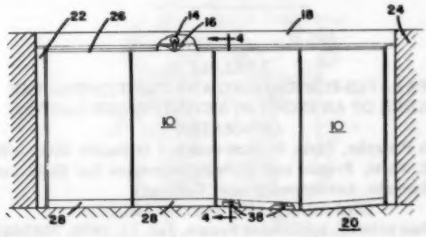
Karl C. Elhen, Montreal, Quebec, Canada, assignor to Modernfold of Canada Limited, St. Lambert, Quebec, Canada

Filed Oct. 1, 1970, Ser. No. 77,262

Claims priority, application Canada, Oct. 30, 1969, 66,257

Int. Cl. E06b 7/20

U.S. Cl. 160—40 **26 Claims**



A movable space divider panel supported from an overhead track arrangement includes a bottom edge seal capable of

moving upwardly or downwardly relative to the panel body to accommodate for any local unevenness in the floor thereby to maintain an effective sound barrier between the bottom of the panel and the floor surface at all times. The seal is supported on the floor by wheels or castors or a low friction slide arrangement. A body of foam is disposed between the panel body and the seal which acts to urge the seal towards the floor. The foam also acts as a sound insulator.

3,762,461

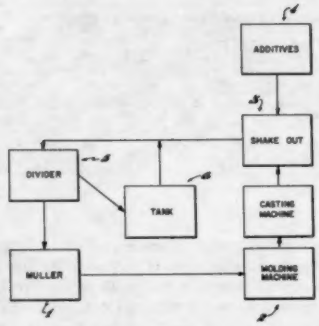
APPARATUS FOR HANDLING AND COOLING FOUNDRY SAND

Joseph S. Schumacher, Cincinnati, Ohio, assignor to International Minerals & Chemical Corporation, Cincinnati, Ohio

Division of Ser. No. 839,339, July 7, 1969, Pat. No. 3,604,493, which is a continuation-in-part of Ser. No. 714,339, March 19, 1968, Pat. No. 3,461,941. This application June 22, 1971, Ser. No. 155,589

Int. Cl. B22c *5/16*; B22d *47/02*

U.S. Cl. 164—270 **1 Claim**



The invention disclosed herein relates to a novel method of handling and cooling foundry sand. The method includes the steps of preparing a quantity of the foundry sand, conveying a portion of the sand to a molding machine and forming molds therefrom, casting a metal into the molds, breaking up the molds, and mixing the unused sand with the used sand. Only a portion of the used-unused sand mixture is subsequently mulled, the remainder being retained in a storage tank for subsequent cooling. By using this method, the temperature of the foundry sand can be controlled and the use of costly cooling apparatus can be eliminated.

3,762,462

APPARATUS FOR STORING AND POSITIONING THE LEADER OF AN INGOT IN A CONTINUOUS CASTING APPARATUS

Joseph Pietryka, Paris, France, assignor to Societe Fives Lille Cail, Paris, France and Konstruktionsburo fur Stahl und Walzwerke, Antwerpnerstrasse, Germany

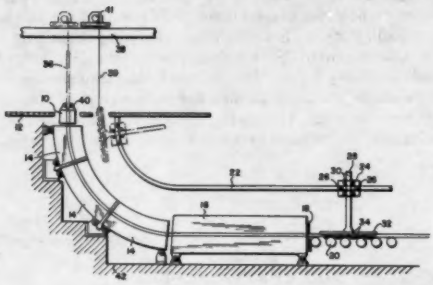
Filed Jan. 21, 1971, Ser. No. 108,292

Claims priority, application France, Jan. 23, 1970, 7002405

Int. Cl. B22d *11/08*

U.S. Cl. 164—274 **8 Claims**

Means for storing and positioning a dummy ingot in a continuous casting apparatus comprises a guide rail extending from the ingot output end to the level of the upper part of the casting apparatus, a carriage displaceable on the guide rail



between the ingot output end and the upper part level, and a storage basket for the dummy ingot mounted on the carriage for movement therewith.

3,762,463

ROTARY REGENERATOR FOR GAS TURBINE ENGINES

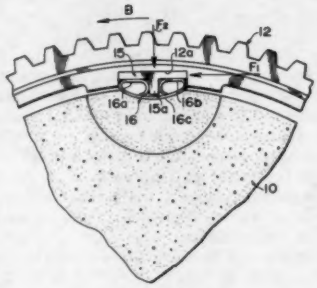
Yoshihiro Sakaki, and Katsuo Suzuki, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 2, 1971, Ser. No. 168,122

Claims priority, application Japan, Oct. 27, 1970, 45/106230; Oct. 28, 1970, 45/94295

Int. Cl. F28d *19/00*

U.S. Cl. 165—8 **9 Claims**



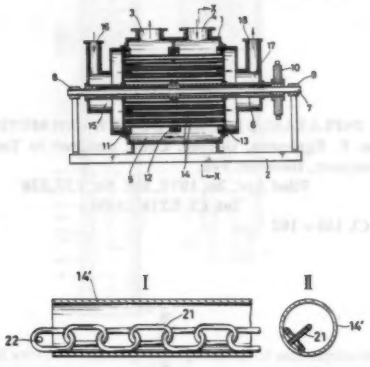
A rotary regenerator for gas turbine engines, which includes a heat-accumulator in a disc form which is rotatable with a rotary shaft, an externally toothed ring gear which is positioned concentrically and at a slight spacing from the heat-accumulator and which is driven to rotate the heat-accumulator and a driving means mating with the ring gear to drive it. Aligned recesses are formed circumferentially equidistantly in outer and inner rims of the heat-accumulator and the ring gear, respectively, and leaf springs are mounted in the aligned recesses to press the heat-accumulator and the ring gear against each other to support the former resiliently by the latter. Mechanical shocks and impact created by a driving force transferred from the ring gear to the heat-accumulator are absorbed by the leaf springs so that the heat-accumulator made of a material susceptible to shocks and impact is protected therefrom.

3,762,464

rtEAT EXCHANGER

Masao Takahashi, Tokyo, Japan, assignor to Japan Engineering and Trading Company Limited, Tokyo, Japan

Filed Dec. 29, 1971, Ser. No. 213,381
Int. Cl. F28g 3/00
U.S. Cl. 165—95 5 Claims



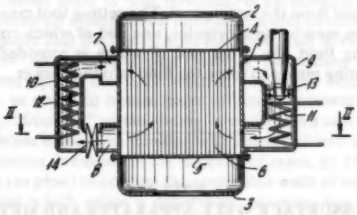
A heat exchanger of the construction wherein a plurality of tubes for passing dust-containing gas therethrough are arranged substantially in parallel with a rotating shaft, a passage for a fluid to be heated is provided among the cluster of the tubes, scraper members are disposed within the individual tubes, one for each, and means are provided for driving the shaft, so that the rotation of the shaft enables the scraper members to slide down gravitationally within the revolving tubes to remove the dust from the inner wall surfaces thereof.

3,762,465

ARRANGEMENT OF A HEATING UNIT IN REACTION APPARATUS

Friedrich Gutlhuber, Ruhmannsfelden, Germany, assignor to Deggendorfer Werft und Eisenbau G.m.b.H., Deggendorf/Donau, Germany

Filed Dec. 13, 1971, Ser. No. 207,399
Claims priority, application Germany, Dec. 17, 1970, P 20 62 095.5
Int. Cl. F28f 9/22
U.S. Cl. 165—107 5 Claims



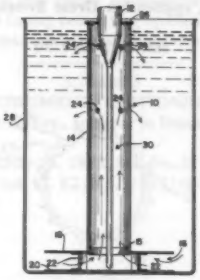
A reaction vessel, for carrying out thermal reactions, has a heat exchange medium circulated therethrough and through a cooler connected to the vessel. A heating unit is provided, external to the reaction vessel, and is connected to the reaction vessel at two points at different respective pressures, for parallel connection of the heating unit with the normal circulating system of the heat carrier for selective circulation of a regulated at least partial current of the heat carrier through the heating unit. The heating unit may be fluid heated or may be electrically heated, and control and shut-off valve means are provided whereby the heating unit may be selectively placed into operation or cut out of operation. The heating unit also may readily be removed from the reaction vessel.

3,762,466

STATIC STIRRER APPARATUS AND PROCESS

Harish P. Bhasin, Chicago, Ill., assignor to Cenco Incorporated, Chicago, Ill.

Filed June 24, 1971, Ser. No. 156,302
Int. Cl. H05b 3/40
U.S. Cl. 165—108 2 Claims



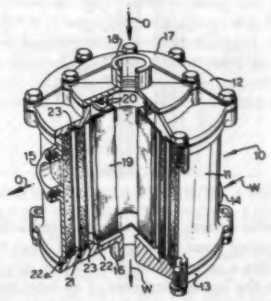
A static stirrer apparatus and process for use in agitating a fluid while elevating the temperature of the same fluid uniformly wherein a heating means for transferring heat to said fluid and elevating the temperature thereof is surrounded by a sleeve means providing a passageway for movement of fluid along the heating means, the sleeve means having an intake opening at its lower end, the fluid surrounding the sleeve means being transferred through the intake opening into the passageway and moved along the heating means through an outlet opening disposed in the upper portion of the sleeve means by convection. A static stirrer apparatus and process wherein the movement of fluid along the heating means within the sleeve means is effective to agitate the fluid surrounding and being heated by the heating means.

3,762,467

HEAT EXCHANGERS

Siu Yun Poon, Riseholme; Kenneth George Quicke, Bromsgrove, and David James Stratford, Branston, all of England, assignors to Clayton Dewandre Company Limited, Lincoln, England

Filed Oct. 26, 1971, Ser. No. 192,186
Int. Cl. F28d 9/04
U.S. Cl. 165—163 11 Claims



A spiral heat exchanger primarily for use as an oil cooler on commercial vehicles, such exchanger comprising spiral heat

exchange means defining two separate fluid paths, and a casing surrounding said means and including respective end plates, each end plate having a respective spiral seating for location of adjacent end of the heat exchange spiral. The heat exchanger may incorporate a tubular oil filter arranged axially of the heat exchange means.

3,762,468

HEAT TRANSFER MEMBERS

Ivan Henry Newson, and Thomas David Hodgson, both of Didcot, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed June 28, 1971, Ser. No. 157,459

Claims priority, application Great Britain, June 30, 1970, 31,778/70

Int. Cl. F28f *1/36*

U.S. Cl. 165—177 **9 Claims**

A special profile for the surface of a heat transfer member is described in which downwardly inclined grooves are formed with convexly curved crests whose radius of curvature decreases to a minimum at the peak where it substantially is less than the minimum radius of the adjacent troughs. A ratio of 1 : 10 is mentioned. The feature is applicable to grooves with an undercut flank on one side of the crest, useful on vertical condensing surfaces in assisting run off of condensate.

3,762,469

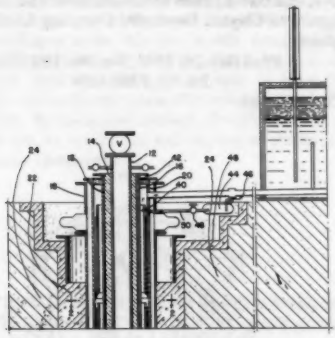
CONCATENATED JACKET REFRIGERATION SYSTEM FOR OIL AND GAS

Albert L. Babb, 2004 Dexter N. No. 303, Seattle; Robert L. Means, 1013 Corona Drive, Tacoma, both of Wash.

Filed July 28, 1972, Ser. No. 276,087

Int. Cl. E21b *43/24*

U.S. Cl. 166—57 **10 Claims**



Heat transfer system for obtaining essentially constant temperature control over a long vertical heat transfer surface which includes a series of shallow depth, open-topped jacket segments on the inside diameter of an intermediate refrigeration casing between an inner casing and an outer casing. The jackets are filled with liquid refrigerant and are provided with overflow pipes so that refrigerant liquid can flow down through the entire series of jackets and keep each one full. Each of the jackets communicates with a common vapor space or annulus. As heat is absorbed the liquid boils and vaporizes and passes into and upwardly through the vapor annulus. By maintaining an essentially constant pressure in the vapor space an essentially constant boiling temperature is maintained in each segment and thus the heat transfer surface to which the jacket segments are fastened is also maintained at that constant temperature. The vapor is condensed at the well head and returned to the system as liquid.

3,762,470

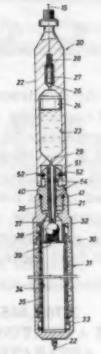
INFLATABLE PACKER DEVICE AND METHOD

James F. Eggleston, Denver, Colo., assignor to Tenneco Oil Company, Houston, Tex.

Filed Apr. 26, 1971, Ser. No. 137,220

Int. Cl. E21b *23/06*

U.S. Cl. 166—182 **4 Claims**



A method and device used in freeing a pipe string stuck in the bore of a well. An inflatable packer and setting tool may be run through the string to a position just below the lowermost free connection where the packer is inflated to sealingly close the upper end of the stuck fish. The fish may then be separated from the remainder of the string. After the fish is freed from the stuck position the packer and fish are retrieved. The bouyant packer and setting tool may be positioned by a weight depending from the packer on a preselected length of wire. The packer may comprise a bladder member inflatable with fluid from the setting tool. The setting tool may comprise a piston member in a cylinder, one end of which contains the inflating fluid, the other end of which is provided with gas generating means to force the fluid into the packer.

3,762,471

SUBSURFACE WELL APPARATUS AND METHOD

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

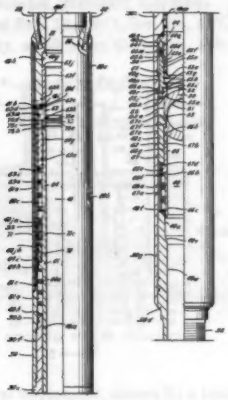
Filed Apr. 6, 1971, Ser. No. 131,629

Int. Cl. E21b *43/12*

U.S. Cl. 166—224 S **21 Claims**

Subsurface well apparatus and method of operating same, wherein a controlled ball valve or closure means is provided, with means for mounting same in a well tubing for normally opening and closing flow through the well tubing, and wherein a fluid flow control assembly having a replacement ball valve

therewith is adapted to be dropped in or otherwise lowered through the well tubing so as to position same above said con-



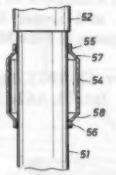
trolled ball valve for subsequent operation of said replacement valve to thereafter serve as a replacement for said controlled valve.

3,762,472

CASING STAND-OFF BAND FOR USE DURING THE RUNNING AND CEMENTING OF CASING IN WELLBORES

Granison T. Alexander, Jr., Houma, La., assignor to Gem Oil Tool Company, Houma, La.

Filed July 24, 1972, Ser. No. 274,272
Int. Cl. E21b *17/10*
U.S. Cl. 166—241 **1 Claim**



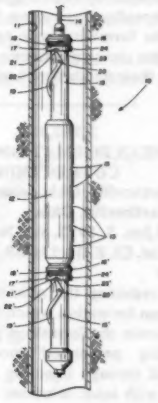
The stand-off band of this invention is particularly useful when mounted on casing which must be run into deviated well bores to assure that the casing does not stick prior to reaching the desired setting depth and permits the casing to be reciprocated up and down, or rotated, during the cementing operation, in order to obtain more effective cementation of the casing. "Sticking" of the casing, a well known and recognized problem to persons familiar with the art of well drilling and completion, is caused in the majority of cases, by allowing the casing (or pipe) to contact the permeable walls of the wellbore, across which exists a differential pressure due to the hydrostatic pressure of the fluid in the annulus being greater than the native pressure in the porous formations which have been penetrated while drilling. The stand-off band of this invention is useful on a string of casing having a plurality of joints of pipe, with at least some of the joints having an externally enlarged portion attached thereto, such as couplings. The stand-off band includes a rigid metal band mounted about one of the joints as a point intermediate the couplings. The band has an internal diameter larger than the outside diameter of the joint of pipe casing about which the band is mounted and smaller than the outside diameter of the couplings. In addition, the band has an outside diameter smaller than the wellbore in which the casing is being placed, with the band being further characterized by having a major portion of the exterior surface thereof in the form of a smooth cylinder. The band of this invention more effectively prevents the casing joints (on which it is installed) from contacting the walls of the wellbore than prior art devices because of its unlimited resistance to collapse from large lateral forces (caused by crookedness of the drilled hole, intended deviation from vertical of the drilled hole, or a combination of the two), coupled with a superior bearing surface which will not dig into unconsolidated formations, as will prior art devices. The resulting effect of a series of these bands is to prevent the casing from sticking prematurely and permits the casing to be either reciprocated or rotated during the casing cementing operation, to assure more effective displacement of the mud fluid with cement.

3,762,473

WELL INSTRUMENT POSITIONING DEVICE

Piero Wolk, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed July 25, 1972, Ser. No. 274,939
Int. Cl. E21b *17/10, 23/00*
U.S. Cl. 166—241 **11 Claims**



An apparatus is provided for positioning a well instrument in a well in the proper position for a well operation. An annular movable element is positioned encircling the well instrument housing. A movable arm is connected to the well instrument housing by a pivot that allows the movable arm to turn relative to said instrument housing. One end of the movable arm is linked to the annular movable element so that said end of the movable arm moves with the annular movable element. A spring encircles the well instrument housing and is connected between the well instrument housing and the annular movable element. A release element allows the force of the spring to move the annular movable element causing the movable arm to pivot and thereby extend the other end of the movable arm until it contacts the wall of the well and places the well instrument in the proper position for the desired well operation.

3,762,474

RECOVERY OF HYDROCARBONS FROM A SECONDARY GAS CAP BY THE INJECTION OF A LIGHT HYDROCARBON

Joseph C. Allen, Bellaire, and William B. James, Houston, both of Tex., assignors to Texaco, Inc., New York, N.Y.

Filed Nov. 24, 1971, Ser. No. 202,015
Int. Cl. E21b *43/25*
U.S. Cl. 166—250 **13 Claims**

Recovery of residual hydrocarbons from a secondary gas cap is effected by injecting into the gas cap via one well a light

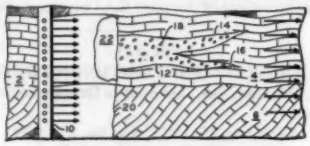
hydrocarbon solvent and thereafter producing the well to recover a mixture of the hydrocarbon solvent and the immobile liquid hydrocarbons from the enriched gas produced.

3,762,475

DECREASING THE PERMEABILITY AND PRODUCING SUBTERRANEAN FORMATIONS

John W. Marx, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 21, 1971, Ser. No. 191,188
Int. Cl. E21d *43/24*
U.S. Cl. 166—272 **15 Claims**



A method for decreasing the permeability and producing a subterranean formation by injecting starch granules into the formation and thereafter increasing the temperature of the granules within the formation to a temperature at which at least a portion of the starch granules are caused to increase to a size greater than their size before heating.

3,762,476

SUBTERRANEAN FORMATION PERMEABILITY CORRECTION

James W. Gall, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 3, 1972, Ser. No. 215,123
Int. Cl. E21b *33/138*, *43/22*
U.S. Cl. 166—294 **8 Claims**

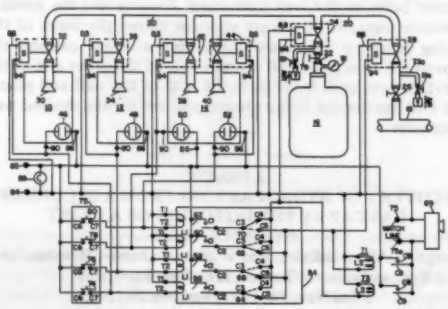
A method for reducing the quantity of water recovered from a subterranean formation which is penetrated by at least one well bore wherein the formation permeability to water is corrected, yielding prolonged mobility control and/or plugging, achieved through injecting aqueous polymer solutions interspaced with ionic solutions of polymer-complexing cations and brine.

3,762,477

FIRE PROTECTION SYSTEM

George W. Mobley, Sr., 3508 Greenbrair Dr., N.W., Huntsville, Ala.

Filed June 9, 1971, Ser. No. 151,189
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 R **4 Claims**



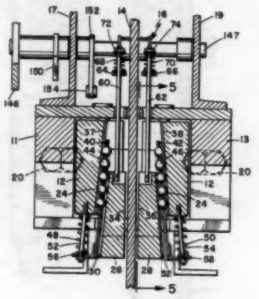
A fire protection system for detecting a fire in one of several protected areas, energizing an alarm and selectively directing a fire extinguishing medium, chemical or water, to that area.

3,762,478

REMOTE CONTROLLED HAZARD-FIGHTING VEHICLE

Phil F. Cummins, 2831 Fifth Ave., Fort Worth, Tex.

Filed Mar. 8, 1972, Ser. No. 232,842
Int. Cl. A62c *27/00*
U.S. Cl. 169—24 **17 Claims**



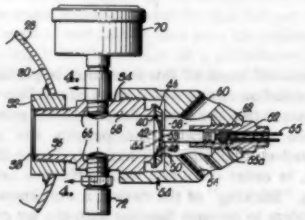
The specification discloses a remote controlled hazard-fighting vehicle including a chassis having crawler tracks mounted on opposite sides thereof. Motors are mounted within the chassis for independently advancing the crawler tracks. A movable turret is mounted on the upper part of the chassis and includes a movable nozzle for being attached through a flexible hose to a source of pressurized fluid. A portable transmitter is provided to selectively generate a plurality of unique tone signal combinations. A receiver is mounted within the chassis for receiving the tone signal combinations, and circuitry within the chassis is responsive to the output of the receiver in order to control the advancement of the crawler tracks and the movement of the turret and nozzle.

3,762,479

REMOTELY ACTUATABLE PORTABLE FIRE SUPPRESSION APPARATUS

Lester L. Fike, Sr., and Lester L. Fike, Jr., both of Blue Springs, Mo., assignors to Fike Metal Products Corporation, Blue Springs, Mo.

Filed Nov. 12, 1971, Ser. No. 198,344
Int. Cl. A62c *35/02*
U.S. Cl. 169—28 **3 Claims**



A portable fire suppression apparatus containing a fire suppressant is provided for use in relatively confined areas such as engine compartments and restaurant ventilation hoods and the like. A suppressant outlet on the suppression apparatus is sealed by a rupturable element that can be fractured upon a selectively, manually controlled command for instantaneously releasing the fire suppressant. A suppressant distributor head is affixed to the outlet to effect a suppressant spray pattern. The distributor head is adapted to position and hold in close proximity to the rupturable element an electrically activated gas generating device for fracturing the rupturable element, either directly by a detonator or a piercing element shifted by the gas generator.

3,762,480

HYDRAULIC CONTROL APPARATUS FOR MAINTAINING AN AGRICULTURAL IMPLEMENT PARALLEL TO THE GROUND SURFACE

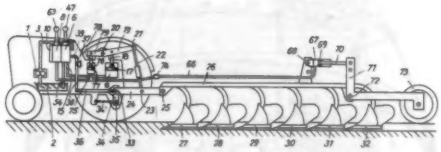
Friedrich Wilhelm Hofer, Hoefingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 22, 1971, Ser. No. 117,294

Claims priority, application Germany, Feb. 21, 1970, P 20 08 051.7

Int. Cl. A01b *63/111*

U.S. Cl. 172—4 **11 Claims**



An agricultural implement, drawn by a tractor, is supported at the front and rear ends by front and rear cylinder and piston means, respectively. When the front end of the implement is raised, or lowered, by the front cylinder and piston means, fluid is automatically supplied to, or discharged from, respectively, the rear control cylinder and piston means for maintaining the implement in a position parallel to the ground surface.

3,762,481

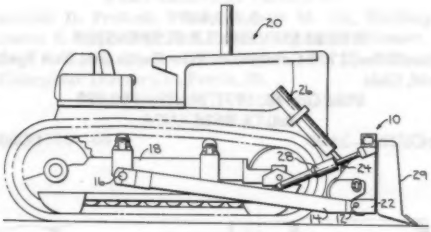
VIBRATORY BULLDOZER

Jan K. Allen, Chillicothe, and Logan J. Johnson, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 13, 1971, Ser. No. 207,074

Int. Cl. A01b *35/00*

U.S. Cl. 172—40 **9 Claims**



There is disclosed a bulldozer with vibratory means operatively connected to the blade and operative to increase the amount of work that can be done by a given sized tractor at a given time.

3,762,482

MARKER FOR FARM IMPLEMENT

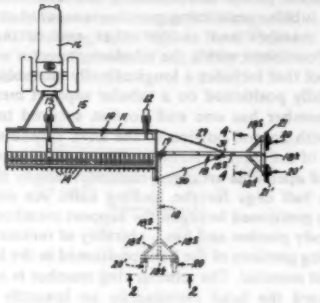
Leroy E. Johnson, 506 1st St. S. W., Stanley, N. Dak.

Filed June 14, 1971, Ser. No. 152,863

Int. Cl. A01h *17/00*

U.S. Cl. 172—126 **4 Claims**

The marker includes a spacer bar secured at one end to the side of a farm implement by a universal joint. Mounted on the other end of the spacer bar is a wheel mounting bar forming a T-shape with the spacer bar. A pair of ground engaging caster wheel assemblies are mounted on the ends of the wheel mounting bar to perform the marking function. A chain is connected between the spacer bar and a forward portion of the



frame to hold the marker in position. When the chain is released, the marker is free to move to a trailing position.

3,762,483

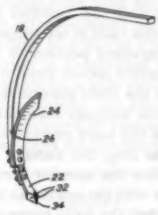
CHISEL PLOW CONSTRUCTION

Elmo R. Meiners, Anchor, Ill., assignor to M. & W. Gear Company, Inc., Gibson City, Ill.

Filed Dec. 8, 1970, Ser. No. 96,055

Int. Cl. A01b *13/08*

U.S. Cl. 172—700 **1 Claim**



The improved chisel plow for use in tilling soil includes a curved support shank. At the end of the shank, an upwardly extending earth moving blade is attached to a bracket and to the shank by means of a nut bolt assembly. A narrower earth plowing chisel blade is also attached to the shank by means of a second nut bolt assembly and the bracket. The blades cooperate, aerate, plow and overturn the soil to one side of the support shank.

3,762,484

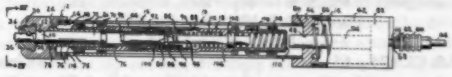
PORTABLE MARKING TOOL

Edwin W. Speicher, Pittsburgh, Pa., assignor to M. E. Cunningham Company, Ingomar, Pa.

Filed Jan. 14, 1972, Ser. No. 217,823

Int. Cl. B25d *9/00*

U.S. Cl. 173—119 **7 Claims**



The portable marking tool has a head member with an axial bore therethrough. An anvil extends through the bore and has

an outer end portion with marking devices thereon. An actuator member connected to a source of fluid under pressure is positioned in spaced relation to the head member and has a fluid actuated piston rod assembly movable longitudinally therein. A tubular connecting member is secured at one end to the head member and at the other end to the actuator member. Positioned within the tubular connector member is a striking tool that includes a longitudinally movable body portion coaxially positioned on a tubular support member. The support member has one end portion secured to the head member with an end portion of the anvil extending into the axial bore of the support member. The support member has a plurality of apertures arranged circumferentially therein and forming a ball cage for the locking balls. An annular ring member is positioned between the support member and striking tool body portion and has a plurality of recessed portions for receiving portions of the balls positioned in the ball cage of the support member. The annular ring member is arranged to move toward the head member by an inwardly extending shoulder on the body portion and away from the head member by a return spring positioned around the support member. A hammer member is positioned within the striking tool body portion and has an enlarged head portion urged against an inwardly extending shoulder of the body portion by a spring member. The hammer member has an end portion extending into the tubular support member. The hammer member end portion has an annular recessed portion in which portions of the balls in the support member ball cage extend to lock the hammer member in a retracted position. The actuator member supplied with fluid under pressure is arranged to move the actuator piston into abutting relation with the upper surface of the striking tool body portion and move the body portion toward the head member. As the body portion moves toward the head member the hammer remains locked in a rearward position by the balls in the support member ball cage and in the annular recessed portion of the hammer. As the striking tool body portion moves toward the head member a striking spring within the body portion is compressed and exerts a force against the hammer member. When an inwardly extending shoulder of the body portion abuts the annular end portion of the annular ring, the annular ring moves with the body portion to position the annular spring recessed portions in underlying relation with the apertures of the ball cage of the support member so that the balls move radially outwardly in the ball cage and release the hammer member. As the annular ring member recessed portions move into underlying relation with the apertures in the ball cage, the lower edge of the striking tool body portion moves into abutting relation with the end wall of the head member. The hammer member released by the locking device moves longitudinally in the support member and strikes the anvil member. The striking force of the hammer member is transferred to the anvil member and the marking device connected thereto. The striking force imparted to the marking device impresses a mark in the surface of the object without exerting a substantial external force on the marking tool.

3,762,485

PROCESS FOR THE PREVENTION OF BALLING

Billy G. Chesser, and Floyd Lee Allen, both of Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.

Filed Sept. 5, 1972, Ser. No. 286,288
Int. Cl. E21b *21/04*
U.S. Cl. 175—65 **6 Claims**

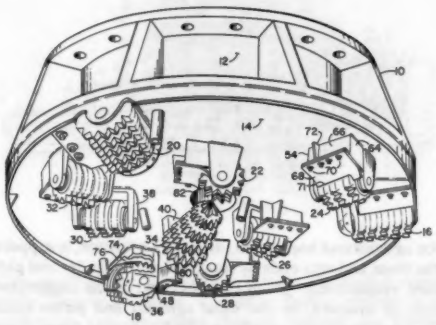
A process for the prevention of balling while drilling subterranean wells wherein the surface of drilling equipment is exposed to an aqueous circulating system having present therein a polyvalent metal ion, said ion being complexed by an organic complexing component, all as hereinafter described.

3,762,486

BIG HOLE DRILLING BIT

William W. Grovenburg, Tulsa, Okla., and Robert R. Gatliff, Las Vegas, Nev., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 6, 1972, Ser. No. 232,159
Int. Cl. E21b *9/12*
U.S. Cl. 175—313 **10 Claims**



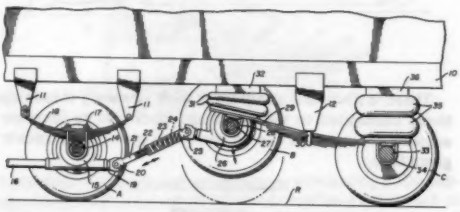
A big hole drilling bit of the type utilizing a plurality of roller cutters mounted for cutting in a plane perpendicular to the axis of rotation of the bit. Regrinding of cuttings is reduced by providing baffles in association with individual roller cutters to prevent the normal pumping action of the cutters from depositing their own cuttings in front of them. Baffles may merely disrupt the pumping action of the roller cutters or they may be designed to utilize the pumping action to assist in transporting cuttings toward a pickup opening through which the transport of the cuttings to the earth's surface is initiated.

3,762,487

WHEELED VEHICLE SUSPENSION

Michael Bilas, 2730 Columbiana-New Castle Rd., New Springfield, Ohio

Filed Oct. 18, 1971, Ser. No. 189,952
Int. Cl. B62d *61/04*
U.S. Cl. 180—24.09 **4 Claims**



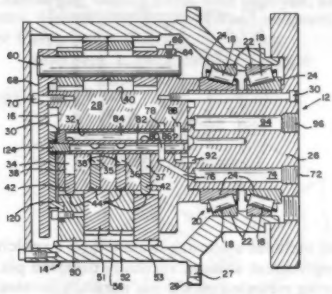
A wheeled vehicle suspension positions tandem axle assemblies on the vehicle by way of semi-elliptic springs normally urging said tandem axle assemblies toward said vehicle so as to lift them from a road surface. Air bags are positioned between the tandem axle assemblies and the vehicle and means for inflating and deflating the air bags permit either or both of the tandem axle assemblies to be lifted from a road surface or engage therewith in a weight carrying relation to said vehicle.

3,762,488

WHEEL DRIVE UNIT

James R. Dammon, Lafayette, Ind., assignor to Fairfield Manufacturing Company, Inc., Lafayette, Ind.

Filed Apr. 13, 1972, Ser. No. 243,643
Int. Cl. B60k 7/00
U.S. Cl. 180—66 F 12 Claims



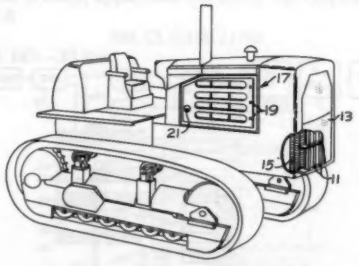
A drive unit for a vehicle which is contained entirely within the wheel hub of the vehicle. A ring gear, fixed internally to the hub, is driven by a plurality of eccentrically rolling pinion gears. Each of the pinion gears is eccentrically rolled by a set of hydraulically actuated pistons disposed in a cylinder block located in the bore of the pinion gears and adapted to move independently and radially outward. The movement of the pistons is controlled by a rotary valve which appropriately ports operating fluid to the radially inward side of the pistons.

3,762,489

ACOUSTICAL ENGINE ENCLOSURE FOR EARTHMOVING VEHICLES

Frederick D. Proksch, Peoria; Robert M. Alt, Washington; James E. Lagemann, East Peoria; Eugene O. Mossner, and John R. Rediger, both of Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 19, 1971, Ser. No. 135,065
Int. Cl. F01n 1/24
U.S. Cl. 180—69 R 13 Claims



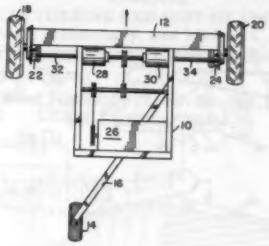
An engine enclosure for earthmoving vehicles, with panels in the sides, front end and top thereof which contain acoustic baffles which attenuate noise emanating from within the engine compartment and which define passages for directing the flow of air through the compartment to satisfy engine cooling requirements. The side panels are hinge-mounted to provide facile access to the engine compartment.

3,762,490

FINAL DRIVE SYSTEM FOR SELF-PROPELLED VEHICLE

Herbert W. Molzahn, Hamilton, Ontario, Canada, assignor to International Harvester Company, Chicago, Ill.

Filed Aug. 2, 1972, Ser. No. 277,184
Int. Cl. B60k 17/02; F16h 57/00
U.S. Cl. 180—70 R 8 Claims



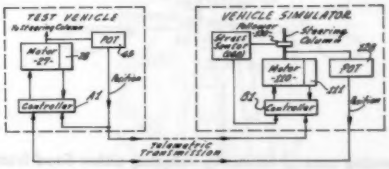
A self-propelled chassis for a windrower wherein the chassis includes a pair of ground drive wheels mounted in spaced relation on the forward portion of the chassis frame. The rear of the frame is supported on a single caster wheel. The chassis includes suitable power and transmission units for driving a pair of power input shafts, one for each drive wheel. Each drive wheel is mounted on the outboard side of a vertical section of the frame. Power is transmitted from the power input shaft by a chain and sprocket drive disposed on the outboard side of the vertical frame section to a driven shaft journaled through the frame section. Power is transmitted from the driven shaft to the ground drive wheel by a gear drive disposed on the inboard side of the frame section. The chain and sprocket drive and the gear drive are enclosed by respective removable housings defining fluid reservoirs for the drives.

3,762,491

STEERING COLUMN ACTUATOR

Ulrich Meyer, Lilienthal, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung, Bremen, Germany

Filed June 16, 1972, Ser. No. 263,427
Claims priority, application Germany, Dec. 3, 1971, G 71 45 514.6; July 1, 1971, G 71 25 310.6
Int. Cl. B62d 5/04
U.S. Cl. 180—79.1 17 Claims

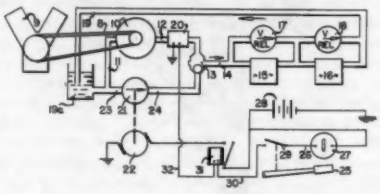


An actuator unit for cooperation with a steering column having an electric motor with disk rotor and drive shaft, a tachometer is flanged to the motor and runs in synchronism therewith; an intermediate control shaft is geared to the drive shaft as well as to the steering column. A switch actuator and a potentiometer tap are also drivingly connected to the control shaft for displacement in response to rotation of the control shaft. The motor is controlled for operating the steering column or to simulate a reaction force against manual steering operation. Both types are used and electrically cross-linked for an unmanned vehicle, test stand simulator combination.

3,762,492
DUAL FLUID SUPPLY CIRCUIT FOR A POWER STEERING AND A HYDRAULIC POWER BRAKE

Benjamin Ron, 10 Sanhedrin St., Tel Aviv, Israel

Continuation-in-part of Ser. No. 133,316, April 12, 1971, which is a continuation-in-part of Ser. No. 34,143, May 4, 1970. This application June 3, 1971, Ser. No. 149,555
Int. Cl. B62d 5/06
U.S. Cl. 180—79.2 R 8 Claims

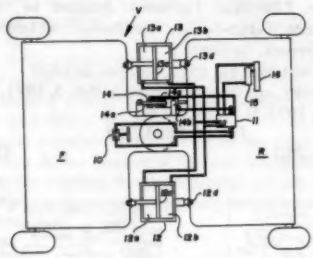


An automotive hydraulic circuit containing a power steering and a power brake, a main pump for normally forcing fluid circulation in the hydraulic circuit and an auxiliary pump for forcing the fluid circulation when the main pump fails to discharge sufficient flow.

3,762,493
VARIABLE RATIO STEERING CONTROL

Eugene M. Hoganson, 16517 Canterburg Dr., Minnetonka, Minn.

Filed Aug. 16, 1971, Ser. No. 171,980
Int. Cl. B62d 5/06
U.S. Cl. 180—79.2 B 5 Claims

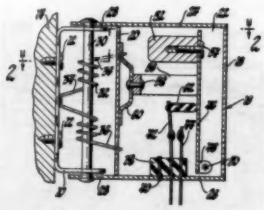


A steering control for heavy vehicles, either fixed frame or articulated, such as earth moving equipment and the like which permits a controlled decreasing steering ratio from a high steering ratio to a low steering ratio from lock to lock of the steering wheel such that a steering ratio suitable to the particular useage of the vehicle at the time is provided. The variable relationship of the unit is obtained by providing a hydraulic steering arrangement for the direct movement of the steered wheels and providing a follow-up or read-out to determine the extent of the rotation of the wheels and linking this read-out back through the direct control through a variable movement device such as elliptical gears such that the read-out device will shift the main or direct control device in a desired non-linear relation.

3,762,494
VEHICLE INERTIA SENSOR

Theodore F. Peters, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 1, 1971, Ser. No. 122,575
Int. Cl. B60r 21/00
U.S. Cl. 180—103 3 Claims

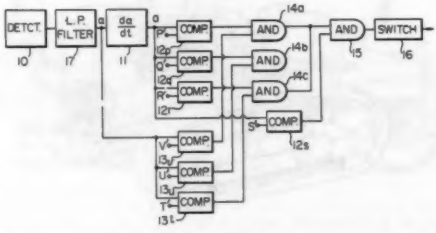


A sensor includes a housing mounted on a vehicle body for swinging movement about a vertically disposed pin. A coiled torsion spring mounted on the pin normally locates the housing in a predetermined position with respect to the supporting body structure. Mounted within the housing are a pair of normally closed switch contacts. A lever swingably mounted within the housing for movement about a generally horizontally disposed axis adjacent its lower end mounts a weight adjacent its upper end. A permanent magnet normally locates the lever in a predetermined position in engagement with an insulating abutment on one of the switch contacts to maintain the switch in open position. When an acceleration pulse of predetermined amplitude and time is received, the housing moves about the pin until it is oriented or aligned with the general direction of such pulse. Upon orientation being achieved, the weight on the lever moves the lever out of engagement with the magnet and against the force of the magnetic flux so that the lever moves out of engagement with the abutment of the one contact and permits the contacts to close.

3,762,495
METHOD AND DEVICE FOR TRIGGERING MOTOR VEHICLE SAFETY MECHANISMS

Keizaburo Usui, Yokohama; Ken Ichi Mitsuhashi, Tokyo, and Takashi Isome, Yokosuka, all of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed Apr. 15, 1971, Ser. No. 134,297
Claims priority, application Japan, July 4, 1970, 45/58447
Int. Cl. B60r 21/10
U.S. Cl. 180—103 8 Claims



A method and a device for triggering a motor vehicle safety device, such as an inflatable safety bag or a burstable safety netting when the motor vehicle collides with another object. The impact between the motor vehicle and the other object is detected and a triggering signal is supplied to the safety device in accordance with both the magnitude of deceleration result-

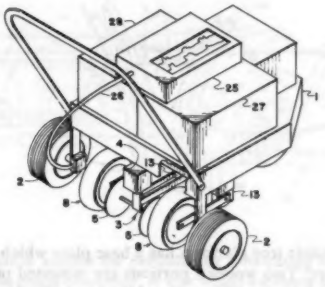
ing from the impact and the rate of the deceleration. The nature of the collision can be monitored by the grade of the linear of the magnitude of the deceleration at an initial stage of the impact so that the safety device can be actuated to its protective position in the event of any collisions such as the vehicle-to-barrier and vehicle-to-vehicle collisions.

3,762,496

DELAMINATION DETECTOR

Lionel J. Milberger; Gilbert Swift, both of Bryan, and William M. Moore, College Station, all of Tex., assignors to Martin Tracker Corporation, College Station, Tex.

Filed Sept. 1, 1971, Ser. No. 176,906
Int. Cl. G01n *29/04*
U.S. Cl. 181—.5 AC **8 Claims**



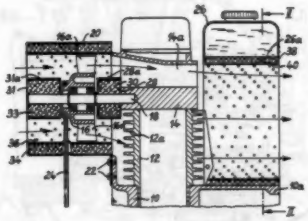
To detect the presence of certain types of hidden flaws within a material having an exposed surface, the surface is tapped at one location to produce sonic vibrations within the material. At another location, an acoustic receiving transducer is coupled to the surface of the material being tested. A characteristic of the electrical signals produced by the transducer which is indicative of the type of flaw to be detected is utilized to denote the presence of a flaw. A mobile form of apparatus which detects flaws while traversing the surface of the material and which indicates the location as well as the existence of the flaws is described.

3,762,497

AIR COOLED INTERNAL COMBUSTION ENGINE WITH NOISE REDUCING MEANS

Ernst Hatz, Ruhstorf, and Johann Schmuck, Feilnbach, both of Germany, assignors to Motorenfabrik Hatz KG, Ruhstort, Germany

Filed Apr. 12, 1972, Ser. No. 243,164
Claims priority, application Germany, Apr. 22, 1971, P 21 19 635.0
Int. Cl. G10k *11/00*
U.S. Cl. 181—33 K **8 Claims**



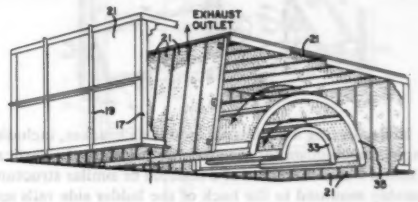
An air-cooled internal combustion engine is provided with noise reducing means without increasing space requirements. A blower is provided to direct cooling air to at least one engine wall, for example a cylinder wall, and an engine accessory such as a fuel tank, which is needed in any event, forms a conduit to convey cooling air away from the engine wall. The cooling air path is lined with noise absorbing material, such as rock wool, held in position by a foraminous sheet. Where the blower impeller is rotatably mounted on a fixed shaft, similar noise reducing means can be provided on the shaft on the downstream side, the upstream side, or both, of the impeller.

3,762,498

GAS TURBINE EXHAUST SILENCER

Howard F. May, Schenectady, and Michael C. Manna, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed July 22, 1971, Ser. No. 165,295
Int. Cl. F01n ; E04b
U.S. Cl. 181—50 **3 Claims**



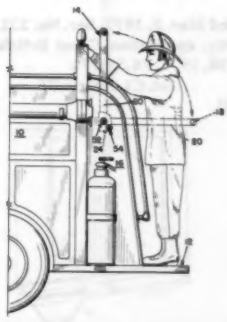
A silencer device for a gas turbine exhaust including a modular, box-like outer structure into which hot gases from the exhaust end of a gas turbine are directed. The interior construction of the device includes two 180° turns, in series, interconnected by transition passageways. Further included, as part of the interior construction, is an acoustical and thermal insulation throughout the silencer which is comprised of layers of fibrous material covered with perforated sheet metal. Provision is made for possible waste heat recovery applications.

3,762,499

SAFETY APPARATUS

Lacy J. Miller, Box 326, Mt. Olivet Church Rd., Welcome, N.C.

Filed Mar. 20, 1972, Ser. No. 233,924
Int. Cl. E06c *7/18*
U.S. Cl. 182—3 **8 Claims**



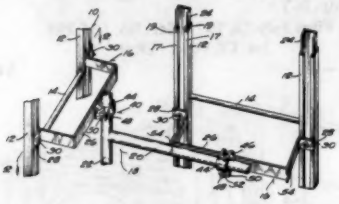
A safety apparatus adapted to be mounted above the rear platform of a fire fighting vehicle for retaining fire fighting personnel thereon during travel of the vehicle includes an elongated safety bar secured to support arms which are pivotally secured to the vehicle for displacement from an inoperative position wherein the bar is forwardly of the personnel and platform to a position where the bar is disposed rearwardly of the personnel. The height of the bar above the plat-

form can be readily adjusted by an eccentric means, and the length of the bar can be adjusted by means of telescoping members which can be frictionally clamped together at selected positions of adjustment.

3,762,500
LADDER

Richard L. Sarno, New Berlin, Wis., assignor to A-T-O Inc., Willoughby, Ohio

Filed Jan. 24, 1972, Ser. No. 220,195
Int. Cl. E06c 9/00
U.S. Cl. 182—93 **9 Claims**



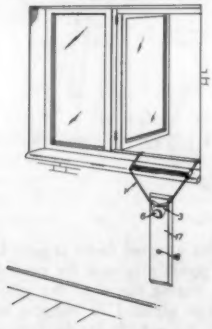
A ladder having a horizontal mounting bracket, including a clamping mechanism for securing the ladder to the vertical or horizontal frame members of a scaffold or similar structure, is adjustably mounted to the back of the ladder side rails so the ladder can be easily attached to the scaffold at any desired vertical position. A T-bolt member, slidably disposed in each of the channel-shaped side rails, carries the ends of the bracket. The bracket is clamped in place against the backside of the ladder side rails by tightening a wing nut threaded onto the T-bolt member. The T-bolt head has curved outer ends which engage and become locked against the inside surfaces of the opposite side walls of the channels during initial tightening of the wing nut. This locking action permits the wing nuts to be fastened by one hand, thereby permitting both ends of the bracket to be easily tightened into place simultaneously.

The clamping mechanism is swivelably mounted to the mounting bracket so the ladder can be attached to either horizontal or vertical members of the scaffold. The mounting brackets can be easily removed from the ladder by rotating the T-bolts so their heads can be lifted through the elongated openings in the respective side rails.

3,762,501
FIRE ESCAPE APPARATUS

Cyril John Probets, 64 Witney Rd., Ducklington, Witney, England

Filed Mar. 2, 1972, Ser. No. 231,265
Claims priority, application Great Britain, Mar. 4, 1971, 5,991/71; May 24, 1971, 16,556/71
Int. Cl. E06c 1/56
U.S. Cl. 182—93 **3 Claims**

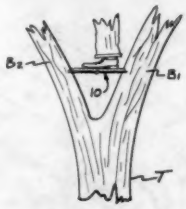


Fire escape apparatus comprising a flexible ladder having an apertured plate at one end and a wallplate for mounting permanently on the internal surface of an outside wall of a building below a window or other suitable opening. The wall plate has a post extending normal to the plate, on which post the apertured plate is hooked and the ladder thrown over the window sill and allowed to hang down the outside of the building. Spacer discs space the ladder away from the wall and self-tightening straps capable of being slipped over wrists are provided on the ladder. The ladder stiles are of steel wire or chain.

3,762,502
TREE PLATFORM

John E. Lawson, Rt. 3, Oregon, Ill.

Filed Oct. 13, 1972, Ser. No. 297,342
Int. Cl. E04g 5/08
U.S. Cl. 182—223 **11 Claims**

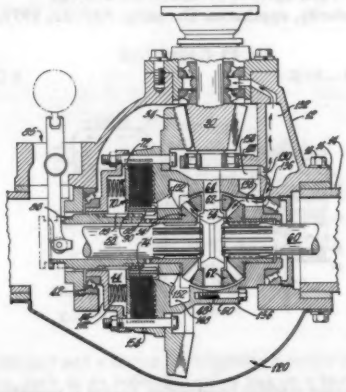


A portable tree platform has a base plate which is hinged at the center. Two wooden portions are mounted on top of the base plate, one on either side of the hinge. Each wooden portion has a V-shape at the end remote from the hinge. The base plate terminates coextensively with the wooden portion except for an impaling portion at the center of each V-shaped end. In use, the platform is positioned in a fork of a tree with the impaling portions contiguous to the tree and with the hinged middle at a higher level. Forcing the middle downwardly forces the impaling portions into the tree and the V-shaped ends against opposite sides of the fork.

3,762,503
LUBRICATION SYSTEM FOR LIMITED SLIP DIFFERENTIAL

William H. Wilder, Lyndhurst, and Ivan E. Benjamin, East Cleveland, both of Ohio, assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Continuation of Ser. No. 841,088, July 11, 1969, abandoned.
This application Apr. 14, 1971, Ser. No. 134,065
Int. Cl. F16h 1/44
U.S. Cl. 184—6.12 **2 Claims**



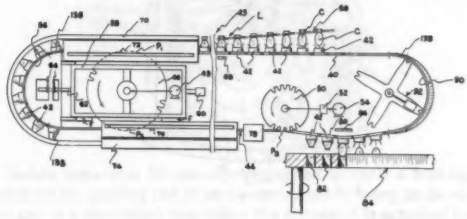
Limited slip differential which is selectively engageable and includes an improved lubrication system. The limited slip

mechanism uses a spring loaded friction disk clutch pack which can break away at excessive torque levels and prevent axle shaft breakage. The novel lubrication system provides improved lubrication of the clutch pack under all operating conditions and prolongs the life of the clutch pack.

3,762,504
LUBRICATION SYSTEM FOR ENDLESS CHAIN CONVEYORS

John D. Bo...yas, 2544 Lambert Dr., Toledo, and Edward A. Ross, 832 Michigan Ave., Waterville, both of Ohio

Division of Ser. No. 77,425, Oct. 2, 1970. This application June 29, 1972, Ser. No. 267,677
Int. Cl. F16n *7/14*
U.S. Cl. 184—15 A **1 Claim**

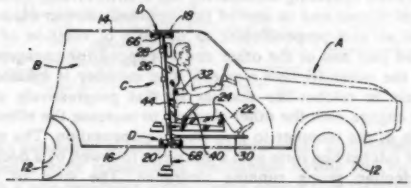


A lubrication system for periodically lubricating the chain of an endless chain conveyor. A star wheel carrying a lubrication discharge fitting on one arm is mounted for rotation coaxial with a constant radius end turn section of an endless chain conveyor. The ends of the arms of the star wheel are engaged by the chain pins of the conveyor as the pins pass around the end turn section to drive the star wheel in rotation coordinated with movement of the chain. A lubricant supply is connected to the discharge fitting and a control system, when actuated, is operable to reciprocate the lubricant discharge fitting into seated engagement with a lubricant receiving fitting on a chain pin traversing the end section, to discharge a charge of lubricant from the supply into the pin while the two fittings are engaged, and to retract the discharge fitting clear of the receiving fitting of the pin before the pin leaves the end turn section. A lubricant fitting is mounted on only one of several arms of the star wheel and thus the fitting does not engage adjacent chain pins in succession. The number of arms on the star wheel is related to the number of pins on the chain so that every pin on the chain is lubricated once before any given pin is lubricated twice.

3,762,505
DEVICE FOR REDUCING SEVERITY OF IMPACT FORCES

Stephan L. Morse, 1802 Wright Ave., Rocky River, Ohio

Filed Dec. 1, 1971, Ser. No. 203,636
Int. Cl. F16f *7/12*
U.S. Cl. 188—1 C **8 Claims**

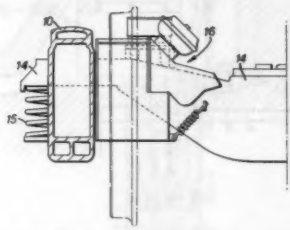


A device for distributing an impact force over an extended period of time includes a deformable plate for dissipating energy during deformation thereof. The plate has an aperture formed therein, and a rod having a longitudinal axis is received in the aperture. Impact loads applied to the rod transversely of its longitudinal axis cause the plate to deform beyond its elastic limit.

3,762,506
RAILWAY VEHICLE DISC BRAKES

Robert Henry Arthur Bannister, Tyseley, Birmingham 11, England, assignor to Girling Limited, Birmingham, England

Filed July 7, 1971, Ser. No. 160,472
Claims priority, application Great Britain, July 8, 1970, 33,105/70; Jan. 15, 1971, 2,139/71
Int. Cl. B61h *13/22*
U.S. Cl. 188—59 **9 Claims**



A railway vehicle bogie frame of the type in which longitudinal side members are movable about respective longitudinal rocking axis is provided with restraining means adapted to counterbalance the unbalanced weight of disc brake structure mounted on the side members. Restraint may be provided by spring means or rigid link means anchored between the side frame members and a bogie cross frame member or directly between the opposite side frame members.

3,762,507
SHOCK ABSORBING SAFETY LINE

John H. Starr, 733 South Columbus St., Alexandria, Va.

Filed May 20, 1971, Ser. No. 145,189
Int. Cl. B65h *59/16*; A62b *1/16*
U.S. Cl. 188—65.1 **5 Claims**

A flexible tube of individual strands woven in the manner of the well known "Chinese finger grip" has therein a collet in tight frictional engagement with the casing wall. The casing and collet constitute a frictional drag type shock absorber for inclusion in a safety line. One end of the casing has means for attachment to an immovable anchor. A cable permanently connected to the collet passes out through the other end of the casing. The free end of the cable has means for attachment to a window cleaner's belt.

3,762,508

SELF-SERVO BRAKING SYSTEMS

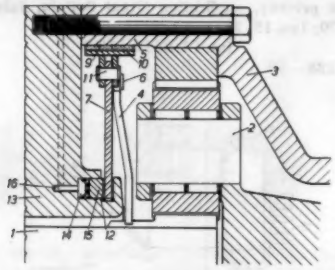
Anthony William Harrison, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed July 1, 1971, Ser. No. 158,970

Claims priority, application Great Britain, July 4, 1970, 32,528/70; Mar. 10, 1971, 6,444/71

Int. Cl. F16d 63/00

U.S. Cl. 188—70 B 9 Claims



In a self-servo braking system comprising two pairs of friction elements one element is common to both pairs or one element of one pair carries an element of the other pair and the elements of one pair are brought into engagement by the drag force on said one element when the elements of the second pair are brought into engagement by a control force.

3,762,509

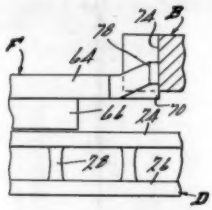
BRAKE SHOE CONSTRUCTION FOR A MOTOR VEHICLE DISC BRAKE

Trevor N. James, and Francis L. Janosi, both of St. Clair Shores, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed July 2, 1971, Ser. No. 159,380

Int. Cl. F16d 65/02

U.S. Cl. 188—73.1 6 Claims



A brake shoe construction for a motor vehicle disc brake. The brake has an anchor plate secured to the wheel support member. The brake caliper is slidably supported on the anchor plate and straddles the brake rotor. The caliper is constructed to urge a pair of brake shoes into engagement with the braking surface of the rotor. One of the brake shoes is slidably supported in guide grooves formed in the anchor by extending end portions with uniplanar V-shaped end surfaces that engage the walls of the grooves. The configuration of the shoe end provides an increase in effective shoe thickness.

3,762,510

AUTOMATIC ADJUSTERS FOR INTERNAL SHOE VEHICLE WHEEL DRUM BRAKES

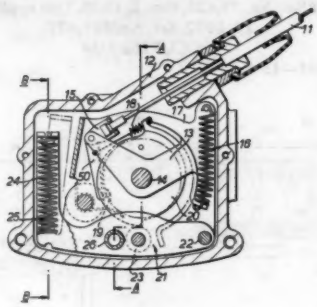
Charles Newstead, Tyseley, England, assignor to Girling Limited, Birmingham, England

Filed Oct. 5, 1971, Ser. No. 186,665

Claims priority, application Great Britain, Oct. 6, 1970, 47,441/70

Int. Cl. F16d 65/56

U.S. Cl. 188—79.5 P 9 Claims



An adjustable abutment assembly for a drum brake having a rotatable adjuster member parallel with the backing plate. A means to store signals representing a predetermined movement of the shoes, and a control means is responsive to the stored signals to effect rotation of the adjuster. The signal storing means includes a rotatable cam rotated by a pawl and ratchet, and the control means includes a pawl and ratchet controlled by the cam to effect adjustment when the cam is rotated.

3,762,511

MECHANICAL COUPLINGS

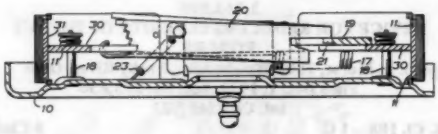
Heinrich Bernhard Rath, Koblenz-Lutzel; Manfred Kaub, Rhens/Rhein, and Hermann Brix, Bassenheim, all of Germany, assignors to Girling Limited, Birmingham, England

Filed Jan. 19, 1971, Ser. No. 107,779

Claims priority, application Great Britain, Jan. 30, 1970, 4,456/70

Int. Cl. F16d 65/54

U.S. Cl. 188—79.5 P 12 Claims



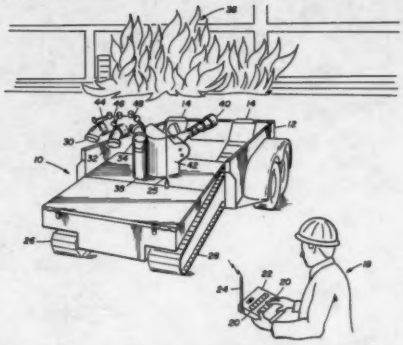
A brake operating mechanism has a strut or stay member pivotal at one end to one of two opposed friction elements about an axis perpendicular to the axis of rotation of the braked part and at the other end is stepped for engagement with the other friction element. The member is biassed to operate in ratchet-like manner so that progressively sized steps engage with the other element to increase the effective length of the member to give wear compensation. The steps are of ratchet like form with a steep rise followed by a decline, the decline giving running clearance. The strut or stay member can comprise two parts operating in the same sense or in scissor-like manner to give "half-step" adjustment. An auxiliary brake actuating means can comprise a lever acting to increase the effective width of a web.

3,762,512

ELEVATOR RAIL GRAB SAFETY APPARATUS

Richard F. McIntyre, San Diego, Calif., assignor to United States Elevator Corporation, Spring Valley, Calif.

Filed Oct. 29, 1971, Ser. No. 193,653
Int. Cl. F16d 59/00
U.S. Cl. 188—189 6 Claims



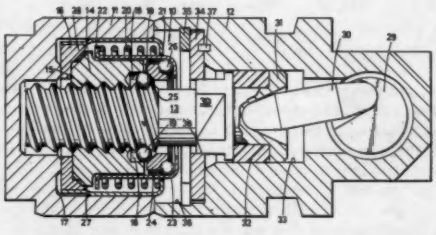
Safety apparatus for elevators designed to exert a braking force on the guiding rail in an elevator shaft to bring an elevator car to a controlled stop when the apparatus is actuated by an overspeed sensing mechanism. The mechanism comprises two brake units on either side of the car including dual wedge shaped brake shoes, guided on wedge blocks by a ball bearing to move in a direction parallel to the rail and in a direction toward the rail, under the influence of actuator rods. The friction generated by initial contact with the rail produces an additional force, wedging the brake shoes through the bearings against the wedge block and producing an increasing force. The total force is limited, to produce a controlled deceleration of the car. A compression spring located between pivoted elongated arms controls the maximum pressure that is applied by the brake shoes. The elongated arms are pivoted on a pivot structure that permits sufficient freedom of movement to allow the brake shoes to align themselves with the rail.

3,762,513

AUTOMATIC ADJUSTERS

Roderick Peter Farr, Chipping Campden, England, assignor to Girling Limited, Birmingham, England

Filed Aug. 31, 1971, Ser. No. 176,498
Claims priority, application Great Britain, Sept. 2, 1970, 41,888/70
Int. Cl. F16d 65/56
U.S. Cl. 188—196 D 18 Claims



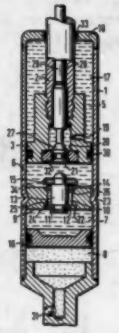
An automatic adjuster for a vehicle brake mechanism comprises a force transmitting mechanism having two members with a non-reversible screw-thread connection therebetween. To effect automatic adjustment responsively to excess brake travel, a spring acts axially upon balls rolling along the screw-thread on one of the members or on a separate thread of the same pitch on that member and causes the ball to roll along the thread. The balls are located in a recess in the other member so that as it is urged along the thread it rotates the other member to effect the necessary adjustment. The balls, therefore, effectively provide a reversible screw-thread connection between the two members for the purpose of effecting adjustment.

3,762,514

SUPPORT COLUMN OF ADJUSTABLE LENGTH

Herbert Freitag, Koblenz-Lutzel, Germany, assignor to Stabilus Industrie- und Handelsgesellschaft mbH, Koblenz-Neuendorf, Germany

Filed May 17, 1971, Ser. No. 143,928
Claims priority, application Germany, May 21, 1970, P 20 24 749.8
Int. Cl. F16d 63/00
U.S. Cl. 188—300 11 Claims



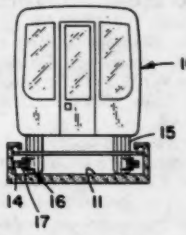
In a column of adjustable length having a cylinder, a piston assembly movable in the cylinder cavity and partly projecting from the same in an axial direction, a first or primary valve operable from outside the cylinder cavity which is divided by the piston assembly into two compartments, and a liquid filling the cylinder cavity except for a cushion of compressed gas, the movement of the piston assembly against the restraint of the gas cushion is blocked by a second, automatic valve in a fixed partitition wall between the piston and the gas cushion in response to sudden movement of the piston assembly inward of the cylinder.

3,762,515

APPARATUS FOR SHIELDING PORTIONS OF A VEHICLE

James M. Rushing, Arlington, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed June 7, 1972, Ser. No. 260,576
Int. Cl. B60k 1/00
U.S. Cl. 191—8 14 Claims



An apparatus for ensuring that exposed, electrically conductive elements of a vehicle, which elements receive dan-

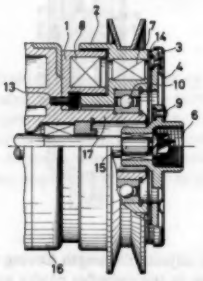
gerous levels of electrical power and may present a hazard to bystanders, are covered by insulative shields when power is conducted to the elements. In one embodiment, the brush assemblies of an electrically powered, guideway following vehicle are covered by respective insulative shields, during periods when the vehicle is operated off the guideway, for preventing contact with the brushes by bystanders. Means are provided for conducting power to the vehicle through a power cable connectable to one of the insulative shields.

3,762,516

MAGNETIC CLUTCH

Takeyuki Matsushita, 6-14 Shimosueyoshi 1-chome, Yokama City, Kanagawa Prefecture, Japan

Filed Apr. 27, 1972, Ser. No. 248,103
Claims priority, application Japan, May 4, 1971, 46/29553
Int. Cl. F16d *27/10*
U.S. Cl. 192—84 C **2 Claims**



A magnetic clutch comprising a V-pulley revolvably mounted with a ball bearing on a boss which axially protrudes from a front panel, a magnet assembly connected to the front panel with a very small gap provided between itself and the V-pulley, and a clutch wheel disposed on the side of the pulley opposite to the side where the magnet assembly is located, face-to-face with the frictionally engaging surface of the pulley on that side and fixedly secured to a driven shaft, the clutch wheel and the driven shaft being connected together through a damper formed of an elastic metal plate by pressing.

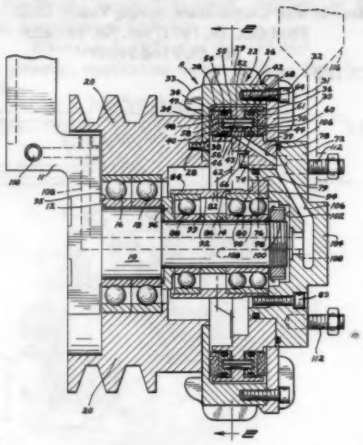
3,762,517

INTERNAL EXPANDING FLUID OPERATED CLUTCH FOR FANS

James V. Hanks, Minneapolis, Minn., assignor to Horton Manufacturing Company Inc., Minneapolis, Minn.

Filed Apr. 3, 1972, Ser. No. 240,663
Int. Cl. F16d *25/00*
U.S. Cl. 192—85 AB **5 Claims**

An internal caliper fluid operated clutch including a hub having a sheave mounted rotatably on the hub and opposed members forming friction surfaces connected to the sheave together with a dual cylinder having a first cylinder and a second cylinder with single means mounting the pistons in the cylinders with means mounting the dual cylinder member between the opposed friction surfaces of the opposed members and means mounting the mounting means for the dual cylinder rotatably on the hub together with a fan on the mounting means and means for supplying fluid pressure at a point between the first and second pistons to move the same



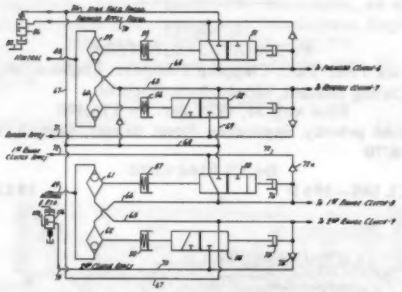
into contact with the opposed friction surfaces of the opposed members whereby the fan mount rotates with the sheave.

3,762,518

VALVES FOR CAUSING OVERLAPPING ENGAGEMENT OF CLUTCHES

Conrad R. Hilpert, Winnebago, Ill., assignor to Twin Disc, Incorporated, Racine, Wis.

Division of Ser. No. 66,282, Aug. 24, 1970, Pat. No. 3,692,160.
This application Apr. 3, 1972, Ser. No. 240,710
Int. Cl. F16d *25/10*
U.S. Cl. 192—87.13 **1 Claim**



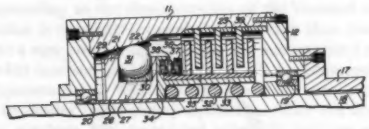
A fluid power control system for a vehicle having forward, reverse and speed range clutches, and the vehicle being driven from a source of power, such as an internal combustion engine, through a torque converter, which is controlled by a fluid actuated and modulated main clutch.

The control system (FIG. 4) includes cross-over valve means connected with the direction clutches and the speed change clutches so that when a shift from one clutch to the other is called for by the action of the operator, the clutch which had been engaged is held in engagement until the newly selected clutch is at least partially engaged, and then the clutch which had been engaged is released. The system eliminates heat generation which is otherwise caused by slow shifting which in turn permits the vehicle power source to build up inertia energy in the power input parts, such as the flywheels, main clutch and torque converter.

3,762,519
CENTRIFUGALLY OPERATED IMPACT AND FRICTION CLUTCHES

Arthur P. Bentley, P.O. Box 139, Boerne, Tex.

Filed July 5, 1972, Ser. No. 269,115
Int. Cl. F16d 43/06
U.S. Cl. 192—105 BB 8 Claims

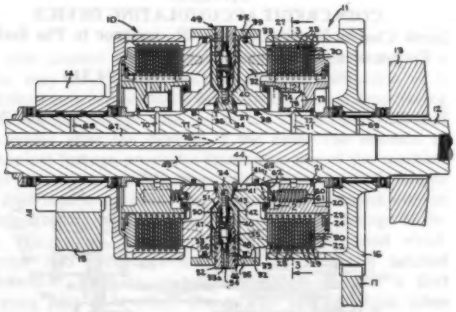


A transmission comprising an input shaft journalled in a housing carrying a power output. Splined on the shaft is a disc having sockets in axially staggered relation opening onto its periphery and in each of which a steel ball is radially movable. The disc is biased towards one end of the housing by a spring and this end is formed with a conical surface that is engaged by the balls. Where the conical surface terminates at its larger end, the inner surface of the housing is formed with a plurality of arcuate recesses which correspond in number to the balls. The recesses and balls are axially staggered and each recess has a small angle of inclination at the entry end for a ball and a more abrupt end which is engaged by a ball after it has moved up the conical surface by centrifugal and entered the recess with a hammer-like impact. The ball may also engage a friction clutch between the shaft and housing.

3,762,520
FLUID OPERATED FRICTION CLUTCH WITH DUMP VALVE

John M. Busch, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 13, 1971, Ser. No. 171,677
Int. Cl. F16d 25/10
U.S. Cl. 192—106 F 3 Claims

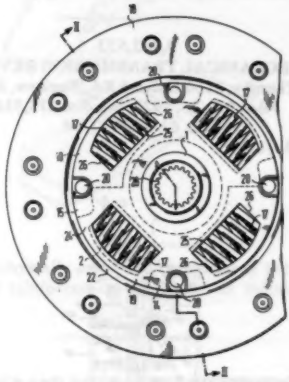


A clutch having a pair of rotatable assemblies with interleaved friction discs is engageable by a piston operating in response to fluid pressure within a cylinder. Upon disengagement of the clutch, a portion of the piston divides a pressure chamber within the cylinder into an inner cavity wherein fluid is retained and an outer cavity from which fluid is discharged. Resilient means, having a strength greater than the force developed by fluid retained within the inner cavity when subjected to maximum centrifugal force, holds the piston in place to prevent the bleeding of fluid from the inner cavity to the outer cavity until fluid in the inner cavity is subjected to pressure for engaging the clutch. A dump valve controls the discharge of fluid from the outer cavity in response to fluid pressure therein, and a retainer locks the piston against differential rotation relative to the cylinder.

3,762,521
DRIVEN DISC FOR A FRICTION CLUTCH

Karl-Heinz Dotter, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed June 8, 1971, Ser. No. 151,007
Claims priority, application Germany, June 15, 1970, P 20 29 356.5
Int. Cl. F16d 43/24
U.S. Cl. 192—106.2 10 Claims

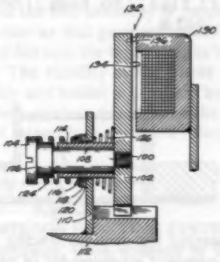


The carrier of the friction facings in a driven disc for an automotive clutch is rotatably mounted on a flanged hub, and axially aligned sets of four recesses in the carrier and the flange receive four helical compression springs. Each spring resiliently resists relative angular movement of carrier and hub from a rest position by engaging respective, oppositely directed abutment faces in the two associated recesses, when the clutch transmits torque from the engine to the wheels of an associated vehicle. During engine braking, when torque is transmitted from the wheels to the engine, only two springs resist angular displacement of carrier and hub, the flange recesses being dimensioned not to present an abutment face to the two other springs.

3,762,522
SELF-ADJUSTING CLUTCH OR BRAKE

Thomas J. Kirschling, Milwaukee, Wis., assignor to Stearns Electric Corporation, Milwaukee, Wis.

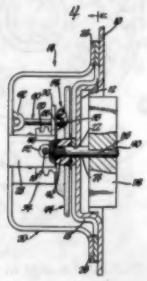
Filed May 10, 1972, Ser. No. 251,893
Int. Cl. F16d 13/75
U.S. Cl. 192—111 A 4 Claims



A clutch or brake with relatively movable friction surfaces is provided with an adjustable stop mechanism which includes position adjusting retainer rings to maintain a pre-determined air gap between the friction faces of the clutch armature and

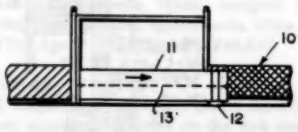
magnet frame when separated irrespecitve of wear. The retainer rings frictionally grip sleeves which are reciprocal between spaced stops on studs or pins fixed to the clutch hub and upon which the armature is reciprocable. The frictional grip of the retainer rings is overcome by the magnetic flux of the field magnet when energized to enable the armature to shift axially to an adjusted position on the sleeves to compensate for wear of the axially facing clutch friction surfaces. The one-way retaining rings maintain the armature at the adjusted position on the sleeves when the clutch is de-energized with the clutch faces at the pre-determined air gap.

3,762,523
MECHANICAL TRANSMISSION DEVICE
Claude A. Thorsby, 3150 Holland Rd., Saginaw, Mich.
Filed July 26, 1972, Ser. No. 275,314
Int. Cl. F16d *71/04*
U.S. Cl. 192—139 **2 Claims**



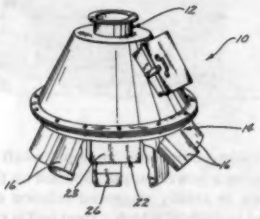
A mechanical transmission device having an input gear and an output gear and a disabling arrangement for positively limiting the number of revolutions of the output gear, the disabling arrangement including a cam on the input gear defining a spiral groove with rigid abutments at each end, a follower pin pivotally supported on the transmission device and projecting into the spiral groove, and a slot in the frame of the transmission device closely slidably receiving the follower pin. As the cam rotates with the input gear, the distal end of the follower pin traverses a substantially linear path until engaging one of the rigid abutments whereupon the rigidity imparted to the pin by the side edges of the slot rotatably disables the cam, the input gear and the output gear.

3,762,524
GATE OPERATOR
Oliver C. Anderson, Aurora, Ill., assignor to DBT Manufacturing Ltd., Stone Park, Ill.
Filed Feb. 4, 1972, Ser. No. 223,449
Int. Cl. F16d *71/00*; B60k *21/00*; E05f *11/00*
U.S. Cl. 192—142 R **4 Claims**



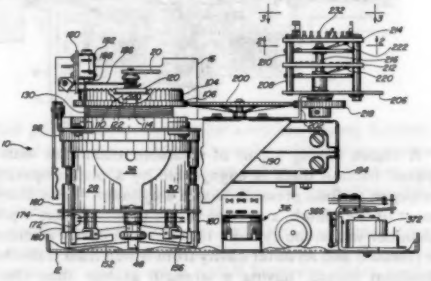
A gate operator for cyclone fencing and the like characterized by a compact arrangement of parts so as to fit within an enclosure having plan dimensions of about 12 × 12 inches and including in vertically stacked relation, a gear reducer-clutch-drive sprocket, and a reversing starter, the arrangement also including a limit switch disposed in side-by-side relation to the gear reducer-clutch-drive sprocket.

3,762,525
DISTRIBUTOR DRIVE MECHANISM
George A. Loveall, Jr., 155 Martin Rd., Waterloo, and Bernhard E. Jacobson, 158 Summit Dr., Cedar Falls, both of Iowa
Filed July 2, 1971, Ser. No. 159,114
Int. Cl. B65g *11/20*
U.S. Cl. 193—23 **5 Claims**



A drive mechanism for a material distributing system is disclosed herein. The distributing system comprises a plurality of downspouts and a movable distributor means which is in communication with a source of material. The distributor means is movable with respect to the downspouts to supply material to various of the downspouts. The drive mechanism is connected to the distributor shaft of the distributing system for rotating the shaft and the distributor means so that the distributor means communicates with a predetermined downspout. A control panel is located remotely of the distributor means and has a thumbwheel switch provided thereon which permits the operator to select the desired position for the distributor means. A control means is provided for selectively controlling the operation of the distributor means and includes a binary sensing means for sensing the position of the distributor means and the operation thereof. Energization of the system causes the distributor means to be rotated to the proper position with the control means sensing the rotation and deactivating the drive mechanism when the distributor means is in its proper position.

3,762,526
COIN CREDIT ACCUMULATING DEVICE
Jacob Charles Kiefer, Chicago, Ill., assignor to The Seeburg Corporation of Delaware, Chicago, Ill.
Filed Aug. 10, 1972, Ser. No. 279,310
Int. Cl. G07f *5/22*
U.S. Cl. 194—1 M **12 Claims**



A device for accumulating coin credits corresponding to the denomination of coins inserted into a coin responsive machine rendering the machine operative when a predetermined total of coin credits have been accumulated. Each deposited coin actuates an associated solenoid causing an angular displacement of a coin determinative pawl actuator proportional to

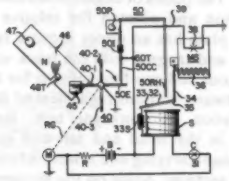
the denomination of the inserted coins. The angular displacement of the pawl actuator causes a switch actuator to disengage motor switch activating a motor. The motor, by a gear linkage, rotates a registering gear through the same angular displacement as the pawl actuator, thereby "tracking" the rotation of the pawl actuator through the same angular displacement until the switch actuator deactivates the motor. The gear linkage also moves the wipers of a rotating switch across a circular configuration of switch contacts to the contact corresponding to the denomination of the inserted coin. This operation is repeated for each inserted coin thus moving the wiper to a new contact representing the accumulated total of coin credits inserted until the wipers reach a predetermined contact representing a total accumulation of coin credits necessary to render the machine operative. After the operation of the machine, the associated solenoids operate automatically to cause the sequential rotation of the pawl actuator and the corresponding operation of the motor until the wipers of the rotating switch are returned or "homed" to the original rest position.

3,762,527

COIN ACTUATED DEVICE HAVING A SOLENOID LEAF RELEASED MICROSWITCH

Arthur W. Daddis, South Orange Twp., Essex County, N.J., assignors to United Billiards Incorporated, Union, N.J.

Filed Apr. 7, 1972, Ser. No. 242,122
Int. Cl. G07f 17/38
U.S. Cl. 194—9 R **12 Claims**



A coin control arrangement wherein the operation of a device may be released for use upon the insertion of a prescribed coin is disclosed which employs a coin drop having no mechanical linkage with the device whose operation is to be released after the deposit of the coin. The absence of mechanical linkage precludes fraudulent use of the machine that is sometimes possible when prior art mechanical plunger type coin inserts are used. The coin drop is equipped with an electrical switch momentarily operated by the passage of the coin. The switch momentarily operates a solenoid which operates and unlatches a priorly mechanically latched microswitch. The microswitch contacts provide a first operating path to a motor driven cam one of whose lobes mechanically releases the device for use. The cam provides a temporary auxiliary operating path for the motor incident to the relatching of the microswitch. Continued action of the cam then breaks the operating path for the motor and readies the apparatus for subsequent operation. A multiple coin control embodiment is also disclosed.

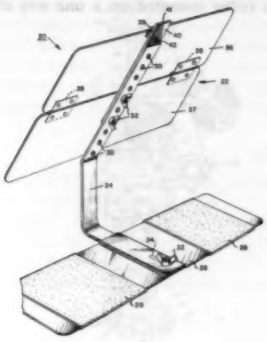
3,762,528

TYPEWRITER SHIELD

Clair Garman, 422 Black Hawk Ln., Stratford, Conn.

Filed Feb. 24, 1972, Ser. No. 228,913
Int. Cl. B41j 29/04
U.S. Cl. 197—105 **9 Claims**

By supporting a pivotable shield above a typewriter keyboard, a versatile and unique typewriter shield is provided, which allows the typist to shield from view either the typewriter keyboard, the copy, both the typewriter keyboard and the copy, or neither. As a result, the shield of this invention can be universally employed regardless of the particular instruction or reinforcement technique an individual typist may require.

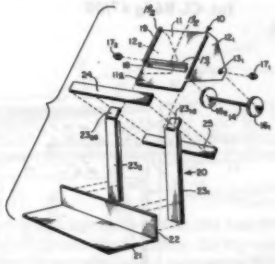


3,762,529

COPY HOLDER AND ROLL LABEL DISPENSING DEVICE FOR TYPEWRITER

Rolf P. Griffith, 5657 Afton P.W., Baton Rouge, La.

Filed Mar. 22, 1971, Ser. No. 126,415
Int. Cl. B41j 15/00
U.S. Cl. 197—133 R **6 Claims**



An improved copy holder and dispensing apparatus for feeding gummed labels from a continuously wound roll into a typewriter. The apparatus comprises a copy holder and label roll dispensing assembly mounted upon a holder, a pedestal, which fixes and secures the said assembly in cooperating relationship with a typewriter so that gummed labels can be continuously unreeled and fed into the typewriter as the typing of the labels progresses. The stability of the whole of the label roll dispensing assembly and holder is provided by an association with the typewriter which is rested upon the base of the holder to hold the said assembly in operative relationship with the typewriter.

3,762,530

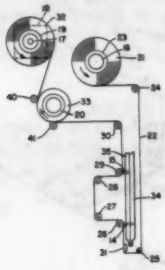
PRINTING RIBBON INDEXING SYSTEM

Ramesh U. Patel, Cambridge, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Aug. 6, 1971, Ser. No. 169,743
Int. Cl. B41j 33/14
U.S. Cl. 197—151 **10 Claims**

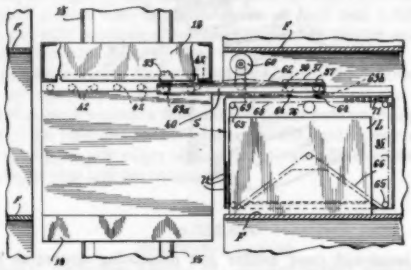
A printing ribbon indexing mechanism for use with a printing mechanism utilizing a pair of operating hammer members.

The indexing mechanism includes a printing ribbon supply reel mounted on a slip clutch, a take-up reel supplying tension to the ribbon, a pair of stationary rollers, a pair of movable rollers, each of which is mounted to one of the hammer members and a pressure roller mounted on a one-way clutch. Move-



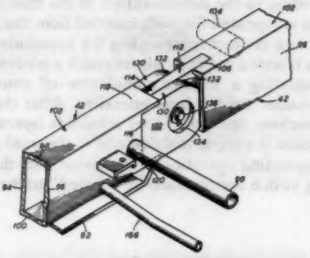
ment of either of the hammer members in a printing operation will allow the movable roller which is attached to that hammer member, to withdraw ribbon from the supply roller such that the hammer member will print on a new area of the printing ribbon.

3,762,531
LOAD STACKER
Kirkwood M. Lee, Ogden, Utah, assignor to Eaton Corporation, Cleveland, Ohio
Filed Aug. 26, 1971, Ser. No. 175,259
Int. Cl. B65g *47/00*
U.S. Cl. 198—24 **9 Claims**



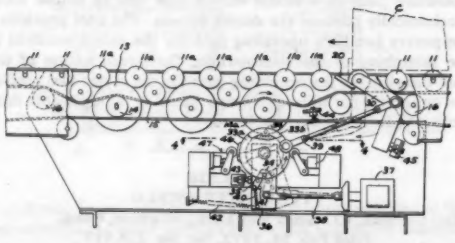
In a load stacker, a load is moved vertically while resting on an elevating platform, and is adapted to be moved lateraly from the platform into a storage bin at one side or the other of the platform, and also to be moved from bins at each side of the platform, back onto the platform. A shuttle moves relatively to the elevating platform in either of opposed directions and through this movement, is adapted to move a load into or out of a bin at each side of the platform. For contacting the load, the shuttle carries a novel form of pusher utilizing a pair of chains between which bars are mounted, the bars being secured at their opposed ends to the chains. Through movement of the chains, the bars may be applied to one end of the load or to another end of the load, and when so applied to an end of the load, the movement of the shuttle effects movement of the load in the direction that may be required. As a part of the platform, a bridge is utilized for facilitating movement of the load onto the platform and off the platform.

3,762,532
PORTABLE BELT CONVEYOR
Robert C. Nelson, Bluefield, W. Va., assignor to West Virginia Armature Company, Bluefield, W. Va.
Filed Feb. 28, 1972, Ser. No. 229,979
Int. Cl. B65g *21/00*
U.S. Cl. 198—117 **11 Claims**



Portable belt conveyor for use in a mining conveyor system to carry coal or ore away from a mine face. It provides an essential link in a train of conveyors where it is located between highly mobile conveyors which move from face to face with a mining machine, and an extendable output conveyor. In a typical mining application it is 100 to 200 feet long and includes a series of intermediate frame sections between head and tail end sections. Each section is individually rigid and includes a pair of spaced parallel side rails with upper tracks for rollingly supporting the discharge carriage of a bridge conveyor. Each side rail has a longitudinal extension consisting of a vertical plate at each end. The plates of adjacent sections are lapped in side-by-side relation and pivoted for relative up and down movement. Each plate has an upper arcuate surface concentric with its pivot and tangent with the track surface, thereby providing continuous and gap-free support for the bridge conveyor carriage between sections regardless of the degree of up or down articulation. A conveyor belt, trained between reversing pulleys in the head and tail end sections, is supported in upper, load-carrying and lower, return runs in the intermediate frame sections. Skids on the sections, and a swivel jack on the head end section, enable the conveyor to be advanced, retreated, and swung as a unit without horizontally distorting the frame and detraining the belt. A spring-biased compensating roller in the head end section minimizes fluctuations in belt tension due to changes in the degree of articulation between sections.

3,762,533
CONVEYOR STRUCTURE
James Giles, Franklin Park, Ill., assignor to American Chain & Cable Company Inc., New York, N.Y.
Filed Mar. 18, 1971, Ser. No. 125,563
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 R **29 Claims**



An article spacer and stop mechanism for metering and spacing articles on a conveyor comprising a conveyor along

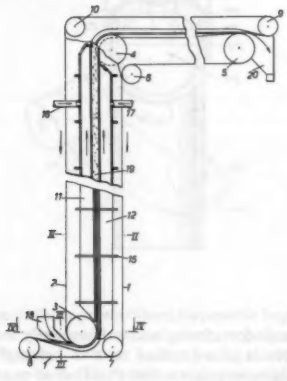
which the articles are moved, a stop movable into and out of the path of the conveyor, and means responsive to the spacing of the articles for interrupting succeeding articles until predetermined spacing is produced between the articles. The stop derives power from the conveyor for movement to and from article interrupting positions.

3,762,534

ELEVATOR-CONVEYOR FOR BULK MATERIAL

Isaac Beresinsky, Haifa, Israel, assignor to Moledeth Development Company Ltd., Haifa, Israel

Filed July 15, 1971, Ser. No. 162,791
Claims priority, application Israel, Aug. 5, 1970, 35062
Int. Cl. B65g *15/14*
U.S. Cl. 198—165 15 Claims



An elevator-conveyor for carrying bulk materials upwards or downwards over a path which extends at least in part vertically or at a slope between two different levels. The conveyor comprises two belts which are pressed against each other at their edges by pneumatic or hydraulic fluid pressure in such a manner that the material is fully enclosed. The pressure fluid acts either in two separate boxes along whose open sides the belts are tightly conducted, or in a single box through which both belts run in common.

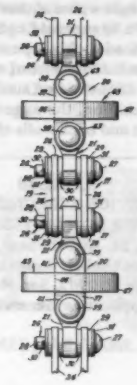
3,762,535

CHAIN FOR FLIGHT CONVEYOR

Roger T. Becker; Donald McMullin, Jr., and John J. Nelson, all of Kalamazoo, Mich., assignors to Kalamazoo Conveyor Company, Kalamazoo, Mich.

Filed Apr. 13, 1972, Ser. No. 243,609
Int. Cl. B65g *19/00*
U.S. Cl. 198—168 10 Claims

A novel chain is provided for a flight conveyor comprising a tube and an endless chain disposed therein, loading and unloading stations, a sprocket engaging the chain, and power means driving the sprocket, the chain being comprised of alternate sprocket links and flight links connected together by a transposition link transposing each successive link through an angle of 90°, thereby imparting a universal-type action to the chain and permitting it to be used with tubes which are not disposed in a single plane.

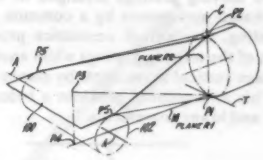


3,762,536

TUBULARIZING AND DETUBULARIZING BELT SYSTEM

Alan Fletcher Rogers, Naperville, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,417
Int. Cl. B65g *15/08*
U.S. Cl. 198—184 25 Claims



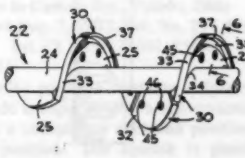
In a moving belt system wherein the belt is tubularized and detubularized stresses and strains during tubularization and detubularization are minimized by passing the belt immediately before tubularization and after detubularization over a flat roller which is elevated a predetermined distance above the plane tangential to the bottom of the tubularized portion of the belt.

3,762,537

REPLACEABLE SHOE FOR AUGER

Kenneth V. Lutz, Saratoga, Calif.

Filed Sept. 24, 1971, Ser. No. 183,329
Int. Cl. B65g *33/00*
U.S. Cl. 198—213 11 Claims



Shoes for worn or new paving augers that can be installed over and in conformity with the paving auger to provide addi-

tional life for the auger. A first wall of the auger shoe is formed with a bore, an enlarged diameter bore and a countersunk hole so as to accommodate either a cap screw with a hexagonal head, a plow bolt with a square shoulder, a bolt with a flat head, a bolt with a hexagonal head, a hexagonal nut, a flat head screw or a flat head socket type screw, and still provide a flush seat for the fastener in the front wall of the auger shoe to thereby maintain an unobstructed surface on the front wall of the auger shoe. In addition, the auger shoes can be installed against both the front and back walls of the auger.

3,762,538

CROSS FEEDER DEVICE ESPECIALLY A COOLING BED FOR ROD MATERIAL

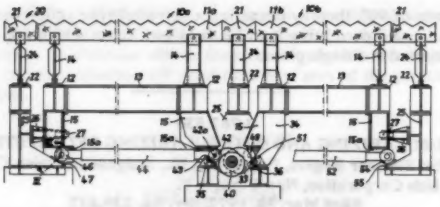
Otto Karl Buchheit, St. Ingbert/Saar, Germany, assignor to Moeller & Neumann GmbH, Ingbert/Saar, Germany

Filed Jan. 7, 1972, Ser. No. 216,148

Claims priority, application Germany, Dec. 28, 1970, P 20 63 942.3

Int. Cl. B65g *25/04*

U.S. Cl. 198—219 **2 Claims**



A cross feeder such as a cooling bed for steel rod incorporates two moving gratings arranged in succession driven with anti-phased movements by a common drive, and a stationary grating. One set of eccentrics produces horizontal movements of the moving gratings while another set of eccentrics produces vertical movements by means of inclined plane surfaces. This arrangement provides a balance drive for the vertical lift and lower movements.

3,762,539

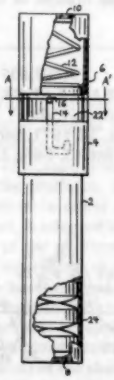
PILL DISPENSER

Glenn Enevold Kerr, 1843 Nigel Ct., Vienna, Va.

Filed July 22, 1971, Ser. No. 165,071

Int. Cl. B65d *83/04*

U.S. Cl. 206—42 **6 Claims**



A pill dispenser constructed of two plastic tubes and equipped with a spring-biased twist-and-lock mechanism. Openings in the tubes are superimposed to dispense pills in one twist-and-lock position and are separated to retain the pills in the other twist-and-lock position. A decal-type label allows easy counting of pills remaining in the dispenser against a scale.

3,762,540

RECEPTACLE HAVING AT LEAST THREE CHAMBERS

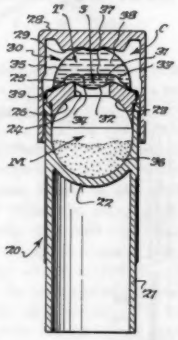
Erwin Baumann, Nendeln; Gerhard Beham, and Hansjorg Frick, both of Schaan, all of Liechtenstein, assignors to Etablissement Dentaire Ivoclar, Schaan, Liechtenstein

Filed May 11, 1971, Ser. No. 142,236

Claims priority, application Germany, May 19, 1970, P 20 24 331.6; May 19, 1970, P 20 24 402.4

Int. Cl. B65d *81/32, 25/08*

U.S. Cl. 206—47 A **5 Claims**



A receptacle for storing and subsequently mixing at least three ingredients of a product such as a dental preparation. The receptacle comprises a first chamber at one side of a perforated dividing wall, and a second and at least a third chamber at the other side of the dividing wall. A collapsible capsule adapted to form at least one of the second and third chambers comprises metal foil or compound material composed of metal foil and plastic film. A method of making such capsule includes deep-drawing and cold welding steps.

3,762,541

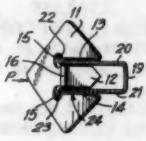
WELDING PIN DISPENSING MAGAZINE

Milton Hinden, 15 Bay Link, Massapequa, N.J., and Charles Giannone, c/o Duro-Dyne Corp., Rt. 110, Farmingdale, N.Y.

Continuation-in-part of Ser. No. 138,901, April 30, 1971, Pat. No. 3,701,878. This application Aug. 16, 1972, Ser. No. 281,205

Int. Cl. B65d *83/00*

U.S. Cl. 206—56 DF **10 Claims**



The present invention relates to a welding pin dispensing magazine for holding and feeding a stack of sheet metal weld-

ing pins whereby the pins may be moved longitudinally relative to the carrier portion of the magazine, but are prevented from being shifted transversely relative thereto until the same reach a discharge station.

The pins are held in shingled fashion in such manner that the edge portions of the pins define a sawtooth arrangement which facilitates serial feeding and releasing of the pins.

3,762,542

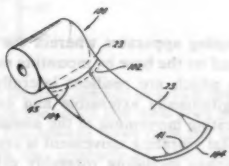
INFANT FEEDING MEANS

Gary S. Grimes, Toledo, Ohio, assignor to Questor Corporation, Toledo, Ohio

Filed Nov. 24, 1971, Ser. No. 201,723

Int. Cl. A61j 9/04

U.S. Cl. 206—58 **2 Claims**



A nurser includes a presterilized disposable bag of thin, flexible, elastic, waterproof material, such as polyethylene, supported inside a rigid, tubular holder having slotted sides or an open bottom or both. The holder converges slightly from one end to the other. Adjacent the latter end the holder is reentrant, forming an external annular channel, and forming a radially extending flange at the lip of the opening at that end. The open end of the bag is turned back over the lip and pulled over and beyond the annular channel and down tight around the tapered body of the holder.

A sterilized nipple has a flange at its base and an elastic band integral with the outer periphery of the flange. The nipple flange is sealed to the bag at the lip of the holder and the nipple and bag are secured to the holder by snapping the elastic band around the holder into the annular channel adjacent the lip of the holder, the bag lying between and being gripped by the holder and the rubber band.

The bag is formed from a continuous tube which, while flattened, has been transversely arcuately perforated and, adjacent and parallel to the perforations, transversely arcuately heat sealed, so that a bag torn from a roll of the tube will have an arcuate bottom which does not form ears when filled with liquid and an arcuate top which provides tabs facilitating folding the top back over the holder and pulling it tight upon its tapered body, thereby to effect sanitary assembly.

The bag has an outer diameter closely fitting the inner periphery of the holder below the reentrant portion and only slightly smaller than the outer diameter of the lip and upper part of the holder adjacent the channel, whereby with the aid of the tabs it can easily be manually pulled down over the lip, channel, and upper part of the tapered holder, frictionally elastically engaging therewith.

The extra length of the bag required to extend down beyond the channel provides sufficient length to permit use of the bag also in narrow mouth holders provided with screw cap type nipple and bag retention means.

3,762,543

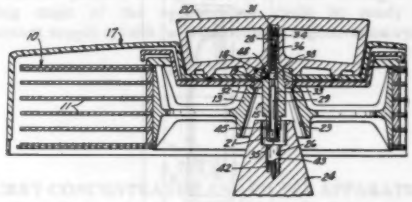
DISK-PACK BOLT ASSEMBLY WITH ATTACHMENT INDICATOR

Wayne M. Wirth, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 50,439, June 29, 1970, abandoned. This application June 8, 1972, Ser. No. 260,887

Int. Cl. G11b 1/02

U.S. Cl. 206—62 P **4 Claims**



A bolt assembly for attaching a disk-pack to the spindle of a drive unit. The bolt assembly has a movable rod which gives a visible indication when the disk-pack is properly secured to the spindle.

3,762,544

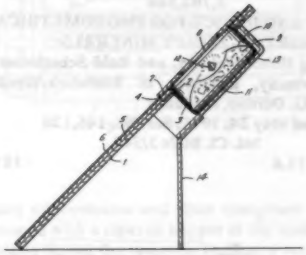
DISPLAY CONTAINER

Richard P. Matthews, 2232 Bellefountain, Houston, Tex.

Filed Oct. 26, 1971, Ser. No. 192,018

Int. Cl. B65d 65/18, 25/54

U.S. Cl. 206—78 R **7 Claims**



A display container for gems and the like having an area for describing the product, or other advertising indicia, and having means for displaying the contents of the container comprising a novel chamber containing a cushion and arranged to give a perception of depth, and said device having a sealed means for protection against contamination of the article being displayed.

3,762,545

LIPSTICK DISPLAY PACKAGE

Ronald C. Warner, and Bobby R. Shepherd, both of Toledo, Ohio, assignors to Cameo, Inc., Toledo, Ohio

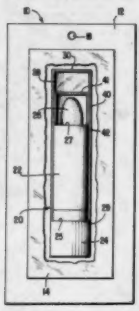
Filed Aug. 2, 1972, Ser. No. 277,164

Int. Cl. B65d 73/00, 85/00

U.S. Cl. 206—78 B **10 Claims**

A lipstick display package contains a lipstick of the type wherein a pomade is supported in a conventional housing for movement from a completely enclosed position therein to a fully extended position. The lipstcik is positioned in the package with a portion of the pomade extending from the housing and with a rigid at least partially transparent tubular cover surrounding the extended portion thereof. The display

package includes a backing sheet having a hanging aperture at the top thereof for mounting the package to a support and a transparent plastic cover sheet having a portion thereof spaced from the backing sheet to provide a chamber wherein the lipstick is positioned. Gravitationally movable opaque



means are provided within the tubular cover for covering the extended pomade portion when the display package is oriented with the hanging aperture at the top and uncovering the exposed pomade portion when the display package is inverted.

3,762,546

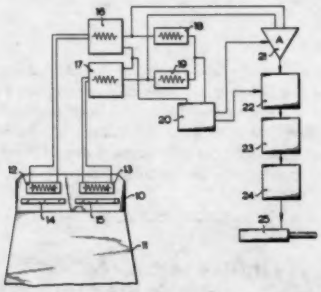
METHOD OF AND DEVICE FOR PHOTOMETRICALLY SORTING LUMPY MINERALS

Diethard Keitel; Heinz Weinold, and Rold Schoriemer, all of Dornap, Germany, assignors to Rheinisch-Westfalische Kalkwerke AG, Dornap, Germany

Filed May 24, 1971, Ser. No. 146,120

Int. Cl. B07c *5/342*

U.S. Cl. 209—111.6 **10 Claims**



A method and apparatus for sorting articles, such as lumps of limestone and dolomite that differ in color. Each article is illuminated and the light reflected therefrom is directed to a pair of photocells, each having a filter for passing a respective frequency of light. A quotient is derived from the signals generated in the photocells and the quotient is employed for actuating an ejector when the derived quotient is different from that desired.

3,762,547

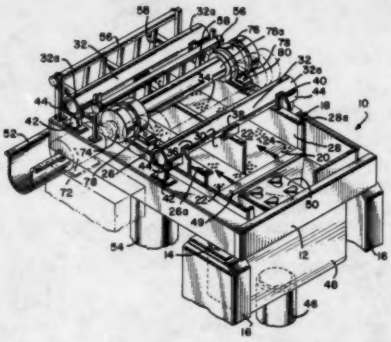
VIBRATING SEPARATING APPARATUS HAVING ADJUSTABLE MATERIAL ADVANCING RATE

Sidney E. Stirk, Nashua, N.H., assignor to Improved Machinery Inc., Nashua, N.H.

Continuation of Ser. No. 865,827, Oct. 13, 1969. This application Mar. 19, 1972, Ser. No. 233,494

Int. Cl. B07b *1/34*

U.S. Cl. 209—326 **9 Claims**



Vibratory separating apparatus wherein the screen basket assembly is mounted on the base by mounting means including resilient elements which are resilient laterally and longitudinally to be longitudinally extensible and compressible to permit orbital vibrating movement of the assembly relative to the base. The orbital vibrating movement is created by vibration generating means including rotatably driven eccentric means; and mounting means are provided for mounting the vibration generating means at a plurality of alternative positions adjusted longitudinally of the screen whereby the rate of advance of material longitudinally along the screen feed face by orbital vibrating movement of the screen is adjustable independently of the intensity and the amplitude of the vibrations by varying the location at which the vibration generating means is mounted by the mounting means.

3,762,548

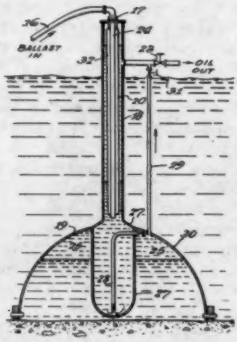
UNDERWATER TANKER BALLAST WATER/OIL SEPARATION

John S. McCabe, Naperville, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Nov. 19, 1971, Ser. No. 200,434

Int. Cl. B01d *21/10*

U.S. Cl. 210—170 **2 Claims**



Method and apparatus for separating oil from tanker ballast water. Ballast is pumped to underwater disengagement zone

operating on water displacement principle. Oil separated from ballast mixture rises to a collection zone from which it is recovered; water escapes from open bottom of disengagement zone to main body of water.

3,762,549

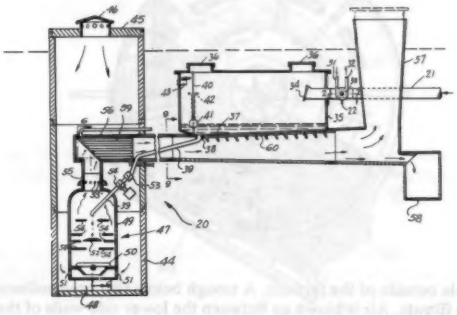
THERMOLYTIC SEWAGE SYSTEM

Lester M. Crampton, 7240 S.W. 63th Ct., South Miami, Fla.

Filed July 2, 1971, Ser. No. 159,240

Int. Cl. B01d *21/24, 1/22*

U.S. Cl. 210—123 **10 Claims**



A system for treating sewage in which the sewage passes a grinder to reduce the solids and then goes into a holding tank under ground. The sewage flows from the holding tank to an evaporator with the products of combustion flowing over water heating coils and under the holding tank to heat the sewage water and to preheat the holding tank. Condensate from the products of combustion flows to a holding tank and from there into the ground with the gaseous material passing off through a stack.

3,762,550

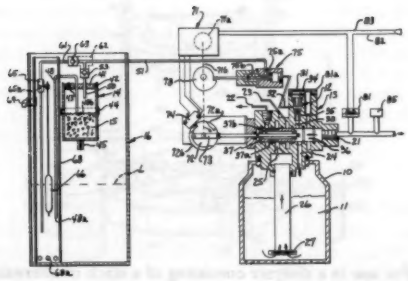
IRON REMOVAL FILTER SYSTEM

Klaus D. Jarr, Davenport, Iowa; John Kenneth Baker, Rock Island, Ill.; David E. Ufford, Blue Grass, Iowa; Elmer M. Deters, Muscatine, Iowa, and Jimmie J. Hamann, Long Grove, Iowa, assignors to Red Jacket Manufacturing Company, Davenport, Iowa

Filed Apr. 27, 1972, Ser. No. 248,166

Int. Cl. B01d *15/06*

U.S. Cl. 210—126 **12 Claims**



An iron removal filter system including a filter tank containing a bed of iron removal mineral, an aspirator and a flow control valve for controlling the flow of water through the aspirator and through the filter tank during successive stages of a regeneration cycle, characterized in an improved regenerant supply system in which a solid water-soluble regenerant material is contained in a closed feeder tank and a measured quantity of water is passed from a measuring tank through the regenerant feeder tank to the aspirator during one stage of the regeneration cycle to dissolve a quantity of the regenerant and feed the same to the bed of iron removal mineral, and in which a measured quantity of water is returned to the measuring tank without passing through the feeder tank during a succeeding stage of the regeneration cycle to ready the regenerant supply system for a subsequent regeneration cycle.

3,762,551

SLURRY CONCENTRATOR AND FILTER APPARATUS

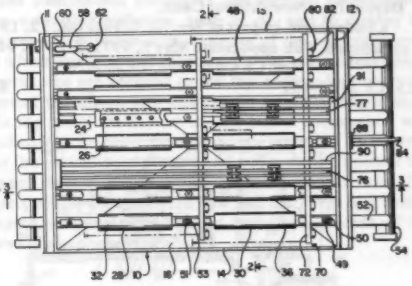
Alfred Henri Parmentier, La Bruyere, 3, Lillois, Belgium

Filed Apr. 15, 1971, Ser. No. 134,149

Claims priority, application Luxembourg, Aug. 11, 1970, 61497; Mar. 31, 1971, 62884

Int. Cl. B01d *29/38*

U.S. Cl. 210—141 **3 Claims**



A slurry concentrator and filter comprises a reservoir for slurry formed with a tapered hopper at the bottom. Stationary pipes extend across the reservoir and carry vertical filter cells having flat screens on opposite sides. A frame structure is movably mounted in the reservoir and carries scraper blades to scrape collected concentrated slurry material from the screens. The frame structure can be arranged to move vertically or horizontally. The frame structure can be reciprocated by a hydraulic cylinder. Spray nozzles can be mounted on the frame structure to wash the screens as the frame structure moves across the screens.

3,762,552

MOTION SENSING LATCH SYSTEM

William G. Landwier, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

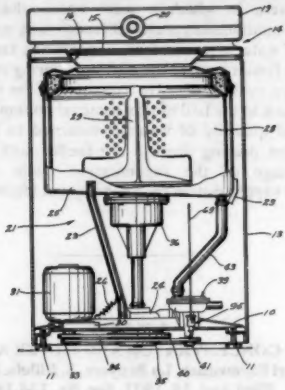
Filed Oct. 20, 1971, Ser. No. 190,774

Int. Cl. H01h *35/02*

U.S. Cl. 210—146 **14 Claims**

A system for latching the access door of a rotatable apparatus includes a normally disengaged rotation sensor operatively connected to a door latch mechanism. The rotation sen-

sor is actuated to a sensing condition through the latch mechanism and feeds back to the latch mechanism an indica-



tion of rotation or non-rotation for selective actuation thereof to a door latching condition or a non-latching condition.

3,762,553

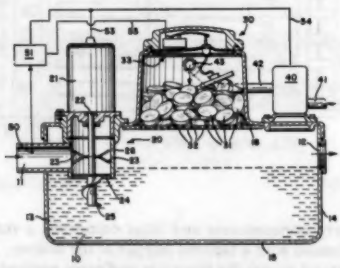
INDIRECTOR CHLORINATOR

Ronald D. Russo, Wethersfield, Conn., assignor to Koehler-Dayton Inc., New Britian, Conn.

Continuation-in-part of Ser. No. 2,101, Jan. 12, 1970, abandoned. This application May 5, 1971, Ser. No. 140,574

Int. Cl. C02c *5/06*; C02b *1/18*

U.S. Cl. 210—152 **6 Claims**



A sewage treatment system particularly adapted for use in small boats, in which an additive for treating the sewage is stored in dry form, such as in tablets, in a tank separate from, but in communication with, the sewage treatment chamber. Flushing a toilet associated with the system automatically activates a water pump and causes water to be pumped from a separate source into the additive tank, dissolve a portion of the additive and flow, such as by gravity, from the tank into the treating chamber. At the same time a combination macerating and mixing unit is energized to reduce solid sewage to at least a maximum particulate size and vigorously mix and remacerate the reduced sewage with the dissolved additive flowing from the tank into the chamber.

3,762,554

CONTINUOUSLY REGENERATING ACTIVE EARTH FILTERING APPARATUS FOR LIQUID WASTES

James I. Wallover, Beaver, Pa., assignor to Wallover Oil Company, East Liverpool, Ohio

Filed Feb. 4, 1972, Ser. No. 223,516

Int. Cl. B01d *35/18*; C02b *1/02*

U.S. Cl. 210—179 **10 Claims**

A continuously rotating annular foraminous table has concentric upper side walls extending upwardly from its opposite sides and concentric lower side walls extending downwardly from those sides. Overlying a segment of the table is a stationary arcuate open-bottom furnace that receives the upper side walls. A bed of activated earth is maintained on the table as the filtering material. Adjacent the exit end of the furnace there is means for delivering onto the bed a waste liquid to be filtered. Air is drawn down through the area of the bed and

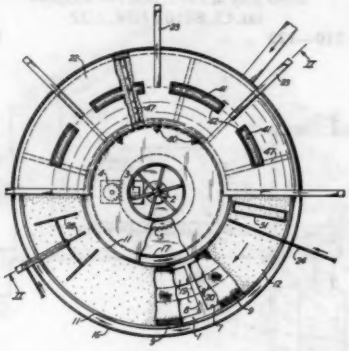


table outside of the furnace. A trough below that area collects the filtrate. Air is blown up between the lower side walls of the table and through the table and bed into the furnace, and means are provided in the furnace for burning out combustible contaminants collected in the bed during filtering, whereby to regenerate the bed. Smoke from the furnace is burned, and gases and solids are scrubbed out of the exhaust.

3,762,555

SUPPORTING PLATES FOR THE MEMBRANES OF A DIALYZER

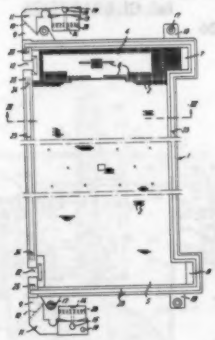
Christian Throkild Boe, Farum, and Steen Gamwell Dawids, Klampenborg, both of Denmark, assignors to Aktieselskabet De Danske Sukkerfabrikker, Copenhagen, Denmark

Filed July 12, 1971, Ser. No. 161,646

Claims priority, application Denmark, July 13, 1970, SH 3642/70

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **6 Claims**



For use in a dialyzer consisting of a stack of alternate pairs of membranes and supporting plates for these, a supporting plate is provided having connector elements for the supply and discharge of blood moulded in one piece therewith, said connector elements being constructed with a weakened hing-

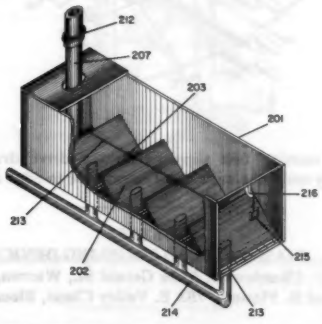
ing line about which the connector element may be folded from a position entirely outside the contour of the plate to a position in which it overlaps and extends beyond an edge of the plate.

3,762,556

OIL SKIMMING APPARATUS

John W. Penton, Sulphur, La., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed May 28, 1971, Ser. No. 148,065
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 2 Claims



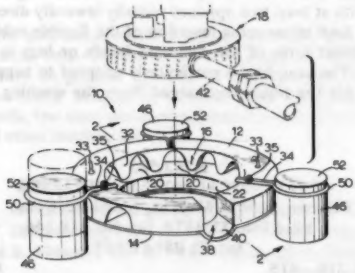
An oil skimming apparatus comprising a floating housing placed within a body of water, for example a settling pond, having an oil slick thereon. The housing includes multiple, interconnected hinged gates to provide weirs over which the oil slick can spill into an oil sump within the housing. Oil which accumulates within the housing is pumped out of the sump into a storage vessel. The interconnected hinged gates are counterbalanced to hold them in a normally upright position, but as oil is pumped from the housing the interconnected gates fall inwardly into the housing at a slight angle so that oil spills over the gates into the sump while also preventing excessive inflow of water. The housing has multiple compartments defined by the gates. Water is removed from the compartments through piping which communicates with the lower region of each compartment.

3,762,557

FLOATING SKIMMER

Adney J. Tudor, and Edward E. Tudor, both of London, Ontario, Canada, assignors to Watermaster Industries Limited, London, Ontario, Canada

Filed Aug. 23, 1971, Ser. No. 173,994
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 4 Claims



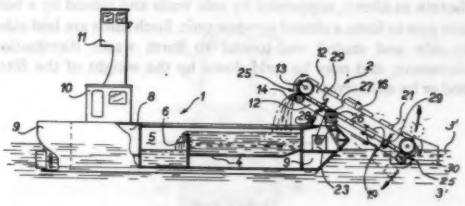
A floating surface skimmer particularly adapted for use with a floating pump housed by said skimmer. The skimmer is circular in shape and has a plurality of peripheral radial openings communicating with a central opening in which the pump is housed whereby each of the said peripheral openings acts as a weir. The height of the skimmer above a liquid surface can be adjusted to control the depth of liquid skimmed.

3,762,558

ANTI-POLLUTION BARGE AND CONVEYER ASSEMBLY

Joseph Axel Anderson, 5155 Langelier Boulevard, Montreal, Quebec, Canada

Filed Sept. 30, 1971, Ser. No. 185,175
Int. Cl. E02b *15/04*; B01d *43/00*
U.S. Cl. 210—242 3 Claims



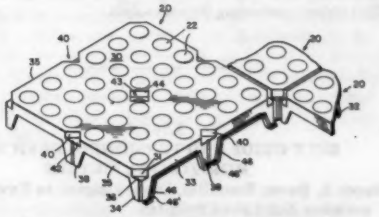
A conveyer arrangement adapted to be used onto a barge or similar boat in combination therewith and including two superjacent endless-belt conveyers arranged to cooperatively pick up a floating pollutant, such as oil, and to convey the same upwardly between adjacent runs of the respective conveyers which are driven at substantially the same linear speed. Transverse ribs are secured to the top endless-belt conveyer and extend therefrom into liquid-tight edgewise engagement with the top run of the bottom endless belt in cooperation with longitudinally extending flexible wings arranged to laterally confine the picked-up pollutant and water during upward displacement thereof intermediate the two adjacent runs. The conveyers are pivoted onto the bow and the barge is provided with water ballast tanks to adjust the dipping depth of the outer end of the conveyers.

3,762,559

FILTER BOTTOM AND MOLDED MODULE THEREFOR

Maurice G. Knoy; Louis M. Alt, and William M. Work, all of Lafayette, Ind., assignors to Rostone Corporation, Lafayette, Ind.

Filed July 17, 1972, Ser. No. 272,394
Int. Cl. B01d *23/18*
U.S. Cl. 210—293 49 Claims



A preferred filter bottom module is molded of high strength plastic resin in a configuration which permits it to withstand the weight of the filter bed, and when bolted down, to withstand the backwash pressure. The module has a reinforced structural floor section formed with a horizontal wall and a network of intersecting vertical ribs, and has supporting

legs at its corners and at intermediate points, each provided with shoulders to engage hold-down bolts. The modules are formed at their sides to interlock and be sealed to each other by sealing compound. Molded nozzles are uniformly distributed over the floor section to pass filtered water and distribute backwash water. Each nozzle includes low-velocity distribution apertures directed laterally, and desirably includes a restricted control orifice to equalize backwash flow among the several nozzles. Either the apertures or orifices are molded into the module, and the others thereof are either molded or installed in inserts. Various nozzle configurations may be used. The modules are light weight and may weigh only about 10 percent of corresponding concrete structures. For example, 4-foot by 4-foot module may weigh only about 100 lbs or less so as to be easily installed with minimum labor.

A modified module has a molded floor section with nozzles therein as above, supported by side walls and closed by a bottom pan to form a closed conduit unit. Such units are laid side-by-side and sealed end-to-end to form water distribution chambers; and may be held down by the weight of the filter bed or by adhesives.

3,762,560

TUBE PRESSURE FILTERS

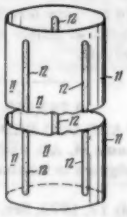
Ralph Derek Gwilliam, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England

Filed May 24, 1971, Ser. No. 146,016

Claims priority, application Great Britain, June 3, 1970, 26,902/70

Int. Cl. B01d *29/00*

U.S. Cl. 210—350 **8 Claims**



A filter element for a tube pressure filter in which the filter element is divided longitudinally into permeable and impermeable sections to facilitate the discharge therefrom of filter cakes containing fibrous solids.

3,762,561

BELT GUIDE AND TENSIONING DEVICE FOR HORIZONTAL FILTERS

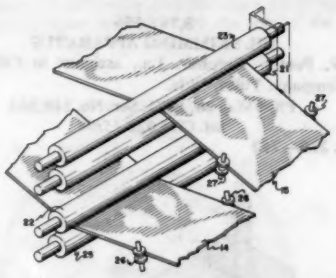
Steven S. Davis, Bountiful, Utah, assignor to Envirotech Corporation, Salt Lake City, Utah

Filed Sept. 3, 1971, Ser. No. 177,628

Int. Cl. B01d *33/14*

U.S. Cl. 210—401 **7 Claims**

Along the lower run of the endless carrier belts in a multiple belt horizontal filter, guides change the elevation of each belt relative to its adjacent belts; the clearance thereby produced between belts allows the mounting of lateral pressure means which push the belt edges to maintain the belts in proper alignment. A pressure-snubber assembly cooperates with the belt drive drum to reduce tension in the lower runs of the belts



without causing belt slippage on the drive drum to consequently make the belts more responsive to edge alignment.

3,762,562

DIAMOND BEAD COUPLING DEVICE

Vincent F. Okuniewski, 5136 Gerald St., Warren, Mich., and Leonard B. Flowers, 753 E. Valley Chase, Bloomfield Hills, Mich.

Filed Aug. 8, 1972, Ser. No. 278,782

Int. Cl. B01d *29/10*

U.S. Cl. 210—460 **24 Claims**

A coupling for removable attachment to the end of a resilient flexible washing machine liquid discharge hose, having diamond-shaped hose engaging beads or lugs on the interior surface of the coupling, is provided. The coupling is further provided with an outwardly directed annular flange and internally with at least two opposed radially inwardly directed stop lugs to limit telescoping insertion of the flexible rubber hose. A modified form of the diamond beads or lugs is also disclosed. The coupling is particularly adapted to support filter means for the liquid discharged from the washing machine hose.

3,762,563

CYLINDRICAL ROTARY STRAINER

Paul F. Petersen, 1096 E. Main St., Stamford, Conn.

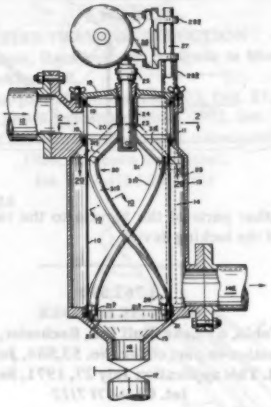
Filed Feb. 23, 1971, Ser. No. 118,146

Int. Cl. B01d *29/38*

U.S. Cl. 210—415 **15 Claims**

A cylindrical strainer equipped with rotary screen cleaning mechanism featuring a scraper structure comprising one or more upright spiral scraper elements provided with squegee strips, the scraper structure being connected loosely to a de-

pending vertical drive shaft, rendering the scraper structure self centering relative to the surrounding screen while providing unobstructed through flow area surrounded by the scraper structure.



3,762,564

FILTER AND METHOD OF MANUFACTURE

Gene Clyde Weedon, Richmond, Va.; George Howard Collingwood, Rolling Fork, Miss., and Robert Charles Winckhofer, Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 825,575, May 19, 1969, abandoned, and Ser. No. 825,576, May 19, 1969, abandoned. This application May 11, 1972, Ser. No. 252,233

Int. Cl. B01d *35/02*

U.S. Cl. 210—446 **13 Claims**

Filters for petroleum based liquids and the like are manufactured from heat-treated fabric composed of multicomponent fibers. In general the filter is characterized by light weight, corrosion resistance, compatibility with petroleum based liquids, low cost, dimensional stability and resistance to shock and other mechanical abuse.

3,762,565

WEDGE LOCK COUPLING DEVICE

Vincent F. Okuniewski, 5136 Gerald St., Warren, Mich., and Leonard B. Flowers, 753 E. Valley Chase, Bloomfield Hills, Mich.

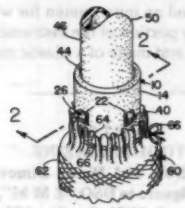
Filed Aug. 7, 1972, Ser. No. 278,628

Int. Cl. B01d *29/10*

U.S. Cl. 210—460 **17 Claims**

A coupling for removable attachment to the end of a resilient flexible washing machine liquid discharge hose, having wedge lock members embodied therein for engaging the exterior surface of the hose inserted within the coupling bore, is provided. The wedge lock members in one preferred form of the invention are provided with lateral longitudinally extending ribs for axial travel in complementary grooves embodied in the body of the coupling. In another preferred form of the invention, the wedge lock members have straight flat lateral sides without such ribs. The wedge lock members are insertable manually through slots into the bore of the coupling body. The coupling is particularly adapted to support means for filtering the liquid discharged from the washing machine hose.

For some time, particularly since domestic automatic power washing machines have been manufactured and in use, a problem has arisen in trapping the lint and relatively solid particles discharged from the washing machine hose to prevent clogging drain outlets or laundry tubs normally used to receive such discharged liquid. Although efforts have been made to prevent the discharge of such lint and relatively solid particles from the washing machine by the fabrication and use of lint collectors in the machine, such devices have not proven entirely satisfactory. Further, many washing machines of the automatic type are not provided with lint collectors, and in either case it has been found that the drains tend to clog and fill with lint and other deleterious particulate matter discharged from the washing machine so that drainage of the discharged liquid is severely impaired or cannot be effected. The coupling device of this invention embodies features permitting a woman, the usual washing machine operator, to attach and remove the coupling to and from the discharge hose with ease and to apply and support a filter medium upon the coupling, whereby lint and drain-clogging matter are trapped and collected before the liquid flows into the drain.



3,762,566

SUPPORTED SEMIPERMEABLE MEMBRANES AND PROCESS FOR PREPARING SAME

Joseph Del Pico, Cambridge, Mass., assignor to Abcoa, Inc., Cambridge, Mass.

Filed Aug. 3, 1971, Ser. No. 168,735

Int. Cl. B01d *31/00*

U.S. Cl. 210—490 **21 Claims**

A supported semipermeable membrane suitable for use in ultrafiltration and reverse osmosis separations, and a method for preparing such membranes which comprises impregnating the surface of a porous support prior to casting onto the surface a thin film of a casting solution, the surface of the porous support impregnated with a nonsolvent for the film-forming material in the casting solution, thereby providing an integral-supported semipermeable membrane of predetermined flux and rejection rates.

3,762,567

METHOD AND APPARATUS OF SEPARATING RED CELLS FROM PLASMA IN WHOLE BLOOD

Anthony M. Albisser, Toronto, Ontario, Canada, assignor to The Hospital for Sick Children, Toronto, Ontario, Canada

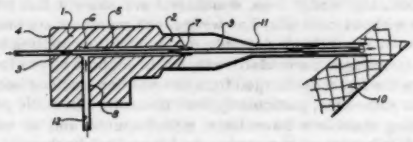
Division of Ser. No. 708,668, Feb. 27, 1968, Pat. No. 3,610,266. This application July 1, 1971, Ser. No. 158,676

Int. Cl. A61b *5/00*

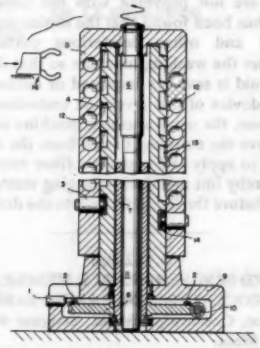
U.S. Cl. 210—532 **1 Claim**

A method and apparatus for separating red cells from plasma in whole blood in which a diluent is added to whole

blood to produce separation of the red cells. A double lumen cannula instrument may be used in withdrawing the blood from a patient and having an outer lumen for providing an anticoagulant diluent and an inner lumen for withdrawing blood plus diluent, the body portion of the instrument being approximately one inch long and made of a silastic material.



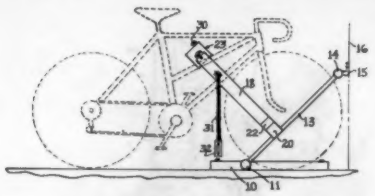
3,762,568
TOOL MAGAZINE
Atanas Vasilev Dimitrov, and Nicola Dimov Stoilov, both of Sofia, Bulgaria, assignors to DSO "Z M M", Sofia, Bulgaria
Filed Aug. 9, 1971, Ser. No. 170,261
Claims priority, application Bulgaria, Aug. 7, 1970, 15424
Int. Cl. A47b *49/00*; B25h *3/04*
U.S. Cl. 211—1.5 **8 Claims**



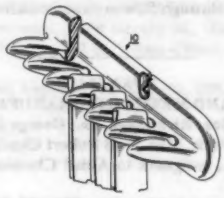
A tool magazine for machine tools provided with program control and automatic tool changing. Tool-receiving seats are disposed in a helical line in equally angularly spaced axially extending rows along a cylinder which is simultaneously rotated and axially traversed so as sequentially to present desired tools at a fixed tool pick up point or station. The magazine has a motor which drives the cylinder, the motor being under the control of a pulse counter actuated by cams which are spaced at the same angle as the successive rows of seats in the cylinder.

3,762,569
KEY-OPERATED COIN-CONTROLLED BICYCLE RACK
William L. Spring, 801 S. Vail St., Arlington Heights, Ill.
Filed Mar. 3, 1972, Ser. No. 231,495
Int. Cl. B62h *3/00*; E05b *73/00*
U.S. Cl. 211—5 **8 Claims**

An apparatus for securing a bicycle in a rack provided with a coin-controlled key-operated locking device associated with a permanent rack structure adapted to embrace a substantial portion of the bicycle frame, and a binding member adapted to secure other parts of the bicycle to the rack through the operation of the locking device.

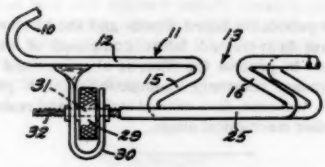


3,762,570
NECKTIE HOLDER
Robert A. Tobin, 67 Lake Bluff Rd., Rochester, N.Y.
Continuation-in-part of Ser. No. 53,884, July 10, 1970, abandoned. This application July 27, 1971, Ser. No. 166,496
Int. Cl. A47f *7/12*
U.S. Cl. 211—13 **14 Claims**



A necktie holder is formed of a simple molded piece of plastic with abutment projections extending obliquely outward from a base and fingers extending obliquely outward from the abutment projections so that the front edge of each finger confronts the oblique edge of a neighboring abutment projection to form a resilient slot for neckties. With such an arrangement the resilience of each slot is independent of the loading of other slots.

3,762,571
NECKTIE HANGER
Henry E. Kamps, 11414 Lebanon Rd., Sharonville, Ohio
Filed Feb. 28, 1972, Ser. No. 229,769
Int. Cl. A47f *7/12*
U.S. Cl. 211—13 **4 Claims**



A necktie hanger having an improved necktie retaining element composed of a flat base portion, opposed straight side portions converging upwardly from the terminal ends of the base portion. Said side portions each join the base portion in a curved portion having a curved interior face, the opposed interior faces of the curved portions functioning to firmly en-

gage opposite edge portions of the necktie and neatly but firmly hold the tie against sliding from the hanger. Means adjusting the lateral extents of the tie retaining elements is also disclosed.

3,762,572

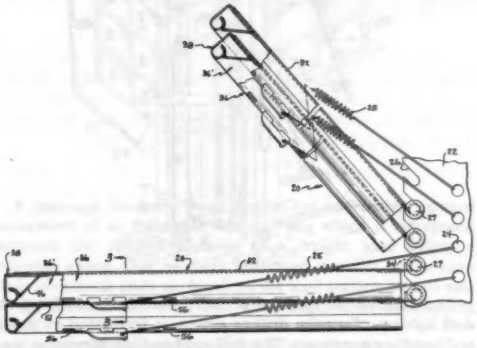
TIRE TRAY CONSTRUCTION

Clarence H. Hager, Rockford, Ill., assignor to Modern Caster Co., Inc., Rockford, Ill.

Continuation-in-part of Ser. No. 100,102, Dec. 21, 1970, Pat. No. 3,680,710. This application Feb. 7, 1972, Ser. No. 224,086. The portion of the term of this patent subsequent to Aug. 1, 1989, has been disclaimed.

Int. Cl. A47f 5/00, 7/04

U.S. Cl. 211—24 10 Claims



A mobile truck has a plurality of tire trays pivotally mounted thereon for movement between a generally horizontal position and a raised position. Each tray has a formed flange member at the front and a flared skirt at each side with an outwardly rolled edge at the bottom of the skirt. The rolled edge is provided with a plurality of aligned openings into which a bracket may be selectively inserted at various positions. The bracket is adapted for fastening to a spring which resiliently holds the tire tray in the raised position. By selectively positioning the bracket, the spring tension may be varied. A plurality of different brackets are provided each with openings spaced different distances in relation to the slots in the rolled edge to thereby give finer adjustment in varying the spring tension.

3,762,573

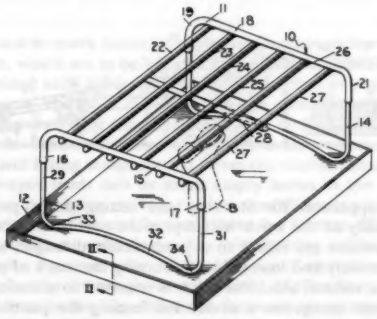
BOOT RACK

Mary M. Collins, and James E. Collins, both of 1046 Hemenway St., Marlboro, Mass.

Filed June 10, 1971, Ser. No. 151,769

Int. Cl. A47f 7/08

U.S. Cl. 211—34 3 Claims



A boot rack consisting of a plurality of parallel spaced bars supported on lets above a drip tray.

3,762,574

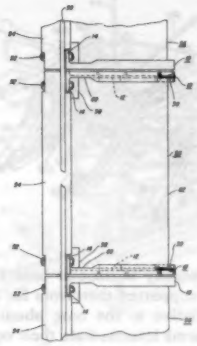
GUIDE AND MOUNTING SUPPORT WITH POSITIVE MEANS FOR CAPTIVATING A PRINTED CIRCUIT CARD DISPOSED THEREON

Robert W. Bentley, Penfield, and Arthur B. Cieslak, Rochester, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed May 5, 1971, Ser. No. 140,363

Int. Cl. H05k 7/18; A47g 19/08

U.S. Cl. 211—41 14 Claims



A guide and support mounting member provides supporting means and flexible positive captivating means for a printed circuit card disposed within a guide channel.

3,762,575

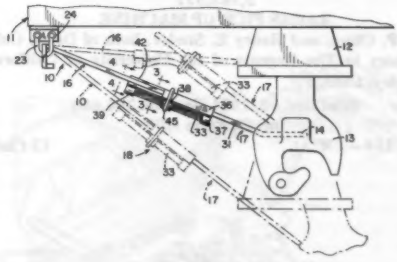
UNCOUPLING ROD ASSEMBLY

Zoltan Cseri, Winnetka, Ill., assignor to Stanray Corporation, Chicago, Ill.

Filed May 18, 1972, Ser. No. 254,475

Int. Cl. B61g 3/08

U.S. Cl. 213—166 12 Claims



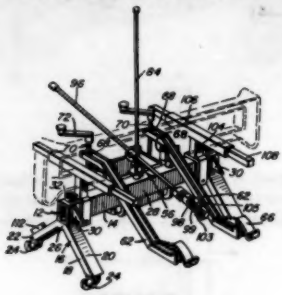
An improved uncoupling rod assembly for uncoupling the couplers of a railway car, said assembly including a first rod section and a second rod section which are connected so as to be capable of transmitting turning torque for operating the coupler unlocking mechanism. The connection is flexible, resilient, and normally stiff to hold the rod sections in axial alignment but resiliently flexible upon impacts non-axially applied on the assembly so as to cause binding thereof. The assembly returns to its normal operating position when the force of the impact is removed.

3,762,576

AUTO BODY PARTS HANDLER

Sam Castellano, c/o Ybor City P.O. 8th Ave. & 18th St., Tampa, Fla.

Filed Nov. 24, 1971, Ser. No. 201,712
Int. Cl. B23q 3/18
U.S. Cl. 214—1 D 3 Claims



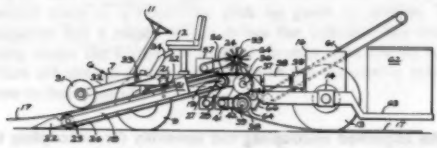
An elongated generally horizontal base having a pair of transverse lift arms supported therefrom for adjustable angular displacement relative to the base about axes extending transversely of the arms intermediate their opposite ends and longitudinally of the base. One pair of corresponding ends of the arms project outwardly of one side of the base and are provided with structure for engaging and supporting a vehicle body portion therefrom. Also, the structure is operatively connected between the base and the arms for adjustable angularly displacing the latter and the base further includes a mounting bracket spaced longitudinally of the base between the arms and from which the lower end of an upright is supported for adjustable angular displacement ablut an axis extending longitudinally of the base. A bracket is carried by the upright for adjustable positioning therealong and includes an adjustable portion angularly adjustable about an axis extending transversely of the upright and longitudinally of the base from which a workpiece locating arm is supported for adjustable longitudinal shifting and with one end of the workpiece locating arm projecting outwardly of that side of the base outwardly from which the workpiece supporting ends of the lift arms project.

3,762,577

RAISIN PICK UP MACHINE

Harold P. Olmo, and Henry E. Studer, both of Davis, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 10, 1971, Ser. No. 206,600
Int. Cl. B60p 1/00
U.S. Cl. 214—1 R 12 Claims



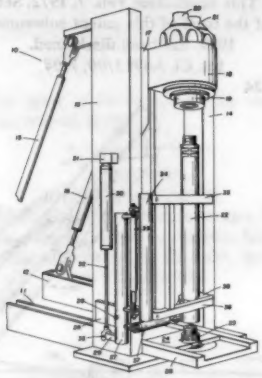
A machine for picking up and recovering raisins lying on a paper strip on the ground has a carriage advancing along the strip to pick up the end of and tension the strip as the carriage advances. From the raised part of the tensioned strip, the raisins are brushed into a receiver. An elevating conveyor and presser wheel at the front of the machine aid in starting the paper strip into the tensioner.

3,762,578

DRILL ROD HANDLING APPARATUS FOR RAISE DRILLS

Robert T. Cooper, Dallas, and Harrison O. Soule, Orange, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 17, 1972, Ser. No. 218,446
Int. Cl. E21b 19/14
U.S. Cl. 214—1 P 3 Claims



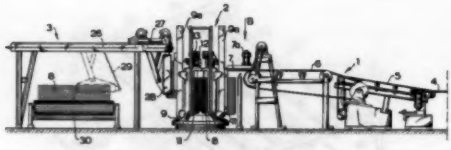
The addition or removal of individual drill rods from the drill column of a raise drilling system is facilitated by a drill rod handling apparatus. The drill rod handling apparatus is attached to the support frame of the raise drill and includes arm means for moving individual drill rods into and out of the uppermost position in the drill column. Gripping elements are connected to the arm means for grasping and retaining an individual drill rod as it is being moved into and out of the drill column. The gripping elements include mechanical locking means for locking the gripping elements when the gripping elements are grasping and retaining an individual drill rod. A shock absorber means is connected to the arm means for absorbing the shock produced by vertical movement of an individual drill rod when the drill rod is contacted and engaged by the drill head of the raise drill.

3,762,579

APPARATUS FOR SETTING DOWN AND STACKING PRODUCTS, MORE PARTICULARLY PANTILES

Kurt Schade, Visbeker Str. 31, Wildeshausen, Germany

Division of Ser. No. 823,260, May 9, 1969, abandoned. This application July 13, 1971, Ser. No. 162,295
Int. Cl. B65g 57/06
U.S. Cl. 214—6 H 4 Claims



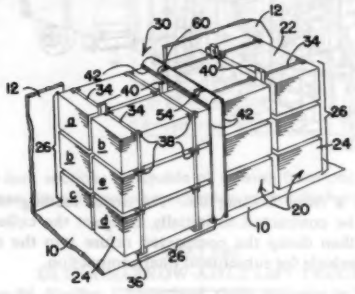
An apparatus for stacking and setting down products, preferably of the brick industry, more particularly pantiles. The pantiles are raised to a predetermined height, stacked progressively and lowered while turning the stack of pantiles about a vertical axis. The stack is removed to a station. The apparatus comprises a device for feeding the pantiles to a turntable rotatable about a vertical axis with vertically sliding support recesses arranged thereon at angular intervals. A discharge device for the pantiles is arranged at the turntable.

3,762,580

DUNNAGE TIE-DOWN ARRANGEMENT FOR FREIGHT LOADS

Norbert J. Melsek, Chicago, Ill., assignor to Signode Corporation, Chicago, Ill.

Filed Nov. 9, 1971, Ser. No. 196,951
Int. Cl. B65g *1/20*
U.S. Cl. 214—10.5 D 8 Claims



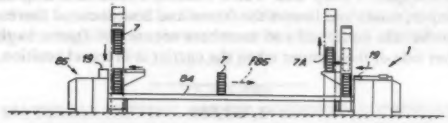
A dunnage tie-down arrangement for preventing upward movement of an inflatable dunnage bag which is interposed between the divided sections of a freight load within a shipping space. One or more tensioned metallic straps have their proximate ends anchored to the load section on one side of the division and their free ends disposed in overlapping sealed relationship with respect to the free ends of corresponding straps which are similarly anchored to the load section on the other side of the division. The thus joined straps bridge the load division above the dunnage bag for hold-down purposes. A method of installing such a dunnage tie-down arrangement which involves a particular sequential placement of the unit items of the load in the shipping space in order to facilitate application of the straps to the load sections and to one another.

3,762,581

LOADING AND UNLOADING EQUIPMENT OF TILES OR THE LIKE IN BAKING PLANTS

Guglielmo Gabbrielli, Viale G. B. Morgagni 11, Firenze, Italy

Filed July 19, 1972, Ser. No. 273,269
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 R 14 Claims



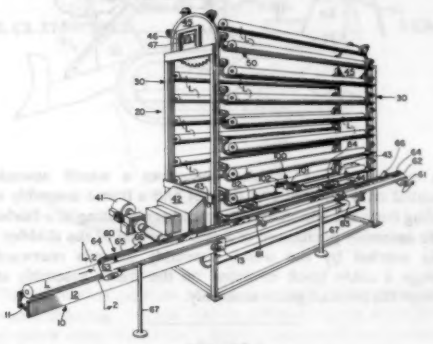
A plant to move boxes or equivalent containers for tiles or the like, which are to be baked and/or enamelled, and to load and unload such pieces on and from the boxes or equivalent containers. The plant includes: a boxing machine with transverse conveyors for tiles, spacing means for the same, thrust means for the simultaneous boxing of the tiles in two or more boxes and lifting means for the boxes (or similar containers). A conveyor feeds two or more empty boxes to the boxing machine. A hanging conveyor moves the full boxes away from the boxing machine and forwards them to a furnace. The plant also includes an unboxing or box withdrawing machine with transverse conveyors for the picking up of the tiles, thrust means for the simultaneous withdrawal of tiles from two or more boxes or the like and vertical movement means for the boxes. A hanging conveyor sends the boxes coming from the furnace to the boxing equipment. A horizontal conveyor is provided to receive from the box extraction machine the empty boxes, and to accumulate and supply the boxing machine with the same.

3,762,582

TRANSFER AND ACCUMULATING APPARATUS

Robert E. Barnhart, and Henry L. Doerger, both of Cincinnati, Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed June 6, 1972, Ser. No. 260,231
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 R 8 Claims



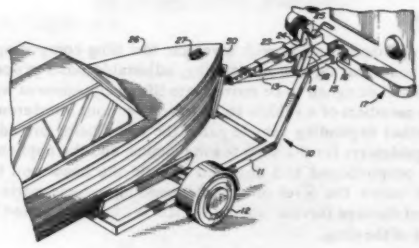
A transfer and accumulating apparatus is provided wherein trays, which are typically part of a ferris-wheel type storage/accumulation apparatus, are also used as a major part of the transfer apparatus. A pusher such as a powered chain with pusher dogs thereon is used to push the articles to be transferred (and stored) onto and across the trays. The apparatus is particularly well adapted to handle logs (i.e., long rolls) of rewound paper since there is no rolling movement and the attendant unwinding of the "logs".

3,762,583

LAUNCHING DEVICE FOR BOAT TRAILERS

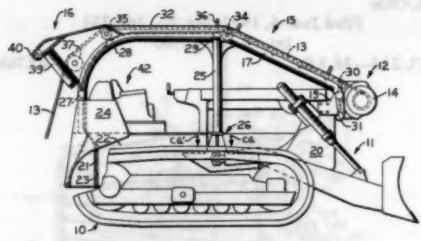
Leon F. Steves, 1181 Meade Ln., Flagstaff, Ariz.

Filed May 22, 1972, Ser. No. 255,537
Int. Cl. B60p *3/10*
U.S. Cl. 214—82 4 Claims



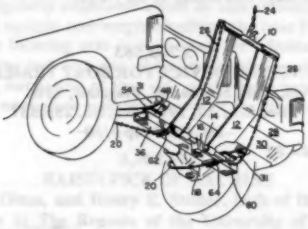
This specification discloses a boat trailer together with mechanism for pushing a boat off the trailer for launching purposes. The mechanism consists essentially of a tube comprising three telescopic sections, with the free end of one section carrying a boat engaging bumper. The intermediate section is formed with a rack, and a pinion extends through an opening in the section in which said intermediate section fits, to engage the rack and upon rotation of the pinion under the influence of a crank handle to extend the tube and thus push the boat off the trailer.

3,762,584
LOG SKIDDER
Robert A. Peterson, San Leandro, Calif., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 27, 1971, Ser. No. 212,207
Int. Cl. B66f 19/00
U.S. Cl. 214—85.5 10 Claims



A track-type log skidder comprises a winch assembly mounted on a forward end thereof and a frame assembly extending from the winch assembly and terminating at a fairlead guide assembly positioned at a rearward end of the skidder. A cable carried by the winch assembly extends rearwardly through a cable track mounted on the frame assembly and through the fairlead guide assembly.

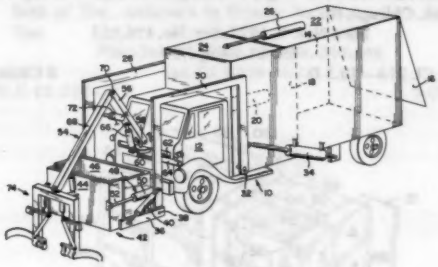
3,762,585
ADJUSTABLE SPACER BLOCK SYSTEM FOR USE IN TOWING VEHICLES
DeWitt C. Hobbs, Fairland, and Robert L. Hauk, Indianapolis, both of Ind., assignors to DeWitt C. Hobbs, trustee, Fairland, Ind.
Filed Aug. 11, 1972, Ser. No. 279,847
Int. Cl. B60p 3/12
U.S. Cl. 214—86 A 5 Claims



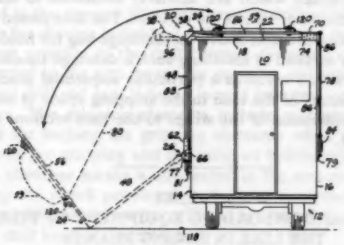
An appliance for use with a vehicle tow sling comprising a cross beam having two upstanding, adjustable posts proportioned and designed to be moved into lifting engagement with frame members of a vehicle to be towed, without interference with other depending vehicle parts, the beam being provided with guideways for the sling towing chains, and the appliance being proportioned and designed to hold the beam and the chains below the level of other depending vehicle parts to prevent damage thereto when a vehicle is lifted and towed by means of the sling.

3,762,586
REFUSE COLLECTION VEHICLE
Elbert Booton Updike, Jr., Box 666, R.F.D., Rt. 1, Culpeper, Va.
Filed Apr. 4, 1972, Ser. No. 240,942
Int. Cl. B65f 3/02
U.S. Cl. 214—302 14 Claims

An improved refuse collection vehicle is disclosed which a single operater can both steer and load without dismounting from the driver's seat. The present vehicle has a boom assembly mounted on the vehicle at a position where it can be observed by the driver and is arranged to grasp either bags or containers and deposit the bags or the contents of the containers into a front loading bin. The front loading bin is adapted to be contracted to initially compact the collected refuse and then dump the compacted refuse into the main body of the vehicle for subsequent final compaction.



3,762,587
BOAT LOADING CARRIER FOR PICKUP MOUNTED CAMPERS
Richard W. Longee, Sr., 41 Oak, Apt. 1, Woodland, Calif.
Filed May 18, 1972, Ser. No. 254,580
Int. Cl. B60r 9/04
U.S. Cl. 214—450 6 Claims

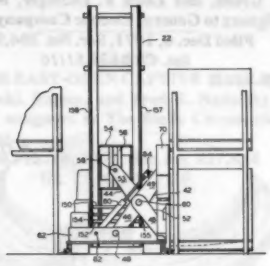


A cantilever-type boat support frame, overlying a pickup mounted camper, is connected with one end of a pair of support legs pivotally connected to a depending side surface of the camper. Pulley and winch means, connected with the camper, raises and lowers the frame and boat secured thereto. Turnbuckle equipped rod members secure the frame to the other side of the camper when the carrier is in travel position.

3,762,588
FRONT AND LATERAL LOADING MECHANISM
Howard C. Hansen, and John S. Messner, both of Battle Creek, Mich., assignors to Clark Equipment Company, Battle Creek, Mich.
Filed Oct. 5, 1970, Ser. No. 77,846
Int. Cl. B66f 9/14
U.S. Cl. 214—730 34 Claims

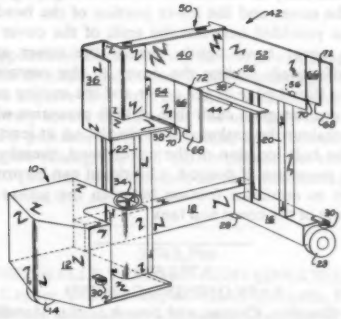
A front and lateral loading mechanism, primarily for lift trucks, in which a load supporting structure is mounted on the forward end of a boom and the boom is connected to a carriage by a pantograph mechanism capable of operating in an overcenter relationship to extend laterally to either side. One of the two links of the pantograph mechanism is continuous and the other link has upper and lower arms rigidly connected to one another by a shaft journalled in the continuous link, with the arms on the opposite sides thereof. One link is pivotally connected to the carriage and slidably connected to the boom, and the other link is slidably connected to the carriage and pivotally connected to the boom. The carriage is

normally mounted on an upright of a lift truck for raising and lowering a load, and the load supporting structure, which may



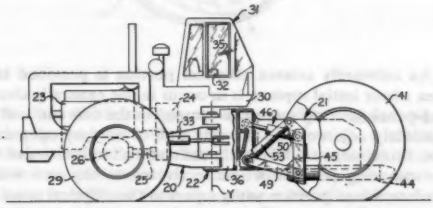
be a fork section, is capable of slewing from one side to the other as the pantograph mechanism moves the boom laterally.

3,762,589
ULTRA-NARROW-AISLE LIFT TRUCK
Walter M. Shaffer, Chesterland, Ohio, assignor to Townmotor Corporation, Cleveland, Ohio
Filed Dec. 16, 1971, Ser. No. 208,576
Int. Cl. B66f 9/14
U.S. Cl. 214—730 **7 Claims**



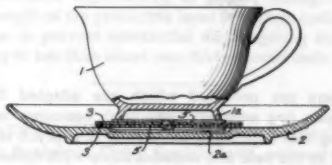
An apparatus and method in the form of a vehicle for transporting, lifting, placing and retrieving loads in narrow-aisle load storage racks. Narrow-aisle operation is provided by vertically movable, extensible tracks which enter the load space and rest upon the racks thus permitting a track-mounted carriage having lift forks thereon to enter and leave a load space.

3,762,590
MATERIAL LIFTING AND TRANSPORTING VEHICLE
Frank A. Grooss, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 27, 1971, Ser. No. 183,778
Int. Cl. E02f 3/00
U.S. Cl. 214—775 **17 Claims**



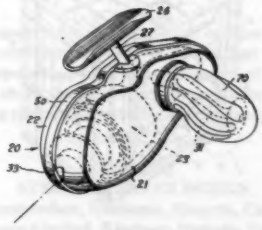
An articulated vehicle is provided with a bifurcated front frame having forwardly extending side members supported by wheels at the outer ends thereof. An elongated tine, located between the side members, is attached on the front frame by a parallelogram-type linkage means for lifting and carrying a load thereon. One pair of links forming the linkage means comprise hydraulic cylinders adapted to selectively tilt the tine to enable the load to be more easily picked up and retained while being carried.

3,762,591
ANTI-DRIP DEVICE
Ralph B. Gray, 1525 Alegriano Ave., Coral Gables, Fla.
Filed Mar. 30, 1971, Ser. No. 129,528
Int. Cl. B65d 23/06
U.S. Cl. 215—100.5 **1 Claim**



This invention pertains to a device which prevents objectionable dripping of liquid such as coffee from the bottom of a cup which when lifted from a saucer carries with it a portion of such liquid which may have been inadvertently spilled into the saucer when the cup is filled or carried to a place of service. The device consists of a disk-like member which is devoid of peripheral walls and which has apertures therein through which liquid may drain into the saucer and has ribs on a surface thereof that engage the bottom of the cup (or the bottom of the saucer) to hold the bottom of the cup spaced from the spilled liquid. The disk-like member is devoid of any peripheral flange thus facilitating cleaning thereof in use with cups and saucers of varying sizes. In one form of the invention two similar disk-like members may be secured in back-to-back relationship with registering apertures, so that ribs on the lower side hold the member spaced from the bottom of the saucer and ribs on the other side hold the bottom of the cup spaced above the spilled liquid.

3,762,592
PROTECTIVE COVER FOR FISHING REEL
Joseph F. Mayes, P.O. Box 8280, Fort Worth, Tex.
Filed Nov. 4, 1970, Ser. No. 86,684
Int. Cl. A01k 97/08; B65d 11/00
U.S. Cl. 220—4 B **8 Claims**



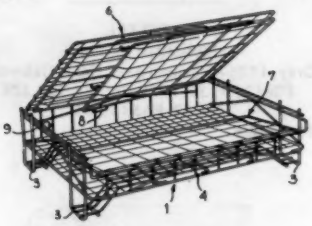
A protective cover for a fishing reel of the spin cast or spinning type having halves readily snapped together to enclose the reel and as readily removed from the reel, particularly when the reel is mounted on a fishing rod and without unstringing the fishing line. A flexible boot is provided on one of the halves for receiving the reel crank regardless of the position of the crank.

3,762,593

DISMOUNTABLE AND SUPERPOSABLE BASKETS

Oscar Beretta, Neuilly sur Seine, France, assignor to Societe Anonyme A Responsabilite Limitee: Technifil, Neuilly sur Seine, France

Filed Dec. 15, 1970, Ser. No. 98,300
Int. Cl. B65d 7/20
U.S. Cl. 220—6 4 Claims



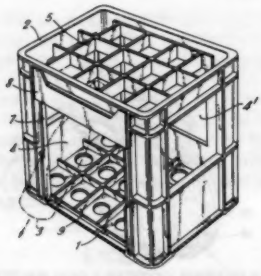
Containers are provided which are adapted for being stacked upon one another. Each such container includes a base having feet depending therefrom. A triptych is hingably connected to the base and includes three walls forming a central panel to which are hinged two lateral panels. The triptych is pivoted to the base and capable of being folded into the same. The triptych is also displaceable to upright position in which the panels constitute extensions of lateral edges of the base. A further wall is provided which is hinged to the base and is collapsible into the latter. This wall includes at least two hingably connected panels and the arrangement is such that the panels are displaceable relative to the base and to above-mentioned lateral panels in order to be engaged by brackets on the lateral panels. This displacement is afforded by the use of elongated loops which couple the panels of the wall to each other and to the base respectively.

3,762,594

ARRANGEMENT PERTAINING TO A CASE FOR BOTTLES, BOXES OR OTHER STANDARDIZED ARTICLES

Georg Utz, Bremgarten/AG, Switzerland, assignor to Svein Stromberg & Co. A/S, Strommen, Switzerland

Filed Nov. 9, 1971, Ser. No. 196,999
Claims priority, application Switzerland, Nov. 9, 1970, 16612/70
Int. Cl. B65d 85/00
U.S. Cl. 220—21 3 Claims



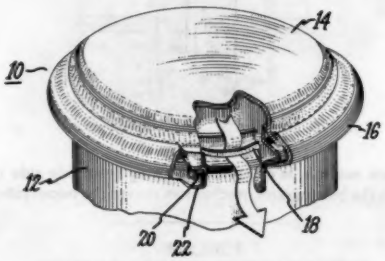
A case for the transportation and storage of bottles, boxes and like articles having an open side and top, a unit defining cells for the reception of the stored articles, the unit being located for sliding movement within the case between a lower and upper position so as to permit easy removal of the stored articles through the open side as the unit is moved vertically upwardly.

3,762,595

PRESSURE RELIEF DEVICE FOR SEALED ELECTRICAL APPARATUS

Robert W. Green, and Louis F. Ettlinger, both of Conover, N.C., assignors to General Electric Company

Filed Dec. 6, 1971, Ser. No. 204,966
Int. Cl. B65d 51/16
U.S. Cl. 220—44 R 7 Claims



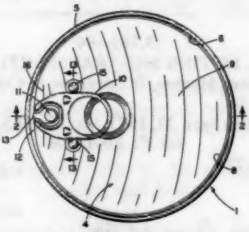
A pressure relief device for sealed electrical apparatus. The sealed apparatus comprises a container provided with a cover member having a flared edge which mates with a bead formed on the top of the container. A gasket member is provided between the bead and the flared edge of the cover. A cover band substantially surrounds the container engaging the flared edge of the cover and the lower portion of the bead. A bolt member is provided between the ends of the cover band to draw the cover band tightly against the cover and bead thereby effectively sealing the cover to the container. The gasket, the flared edge of the cover and the mating surface of the bead are designed such that at high pressures within the sealed container the gasket will be displaced, at least into the area of the bolt location of the cover band, thereby venting such high pressures. If desired, a lubricant can be provided to the gasket to minimize friction between the gasket and the mating parts of the cover and tank.

3,762,596

EASY OPENING CAN END

George J. Henning, Canton, and Joseph Scalia, Massillon, both of Ohio, assignors to Van Dorn Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 16,451, March 4, 1970, abandoned. This application July 24, 1970, Ser. No. 58,077
Int. Cl. B65d 17/20
U.S. Cl. 220—54 5 Claims



An outwardly convex elliptical portion is provided in an area where initial rupture is to occur in the generally circular end-panel-defining score line located in the can end wall immediately adjacent the can side wall of an easy open metal can. Projections are formed in the end wall to locate and hold the can ring pull tab which is riveted to the end wall in predetermined position with respect to the elliptical score line portion with the rounded tab nose overlapping and its axis extending radially of the end-panel-defining score line. A straight secondary score line shallower than the end-panel-

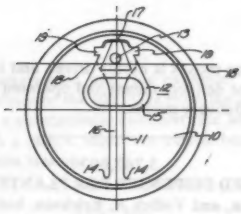
defining score line and perpendicular to the axis of the ring pull tab is formed in the can end wall between the pull tab riveted connection with the end wall and the elliptical score line portion.

3,762,597

CAN WITH EASY-OPEN CAPTIVE TEAR STRIP

Elton G. Kaminski, Sidney, and Fred R. Nadolsky, Vandalia, both of Ohio, assignors to The Stolle Corporation, Sidney, Ohio

Filed Feb. 18, 1972, Ser. No. 227,424
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 5 Claims



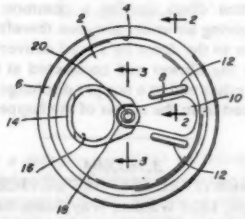
The application discloses, in a beverage can adapted to be opened for drinking therefrom, or for dispensing the contents thereof, a captive tear strip extending diametrically substantially entirely across the can end. The tear strip is torn open by means of a pull tab, which is provided with fulcrum elements which, upon raising the pull tab to initiate the tear, force a portion of the tear strip upward, thereby facilitating the tearing open of the tear strip.

3,762,598

THERMALLY TREATED CONTAINER WALL

Herbert Gayner, Monroeville, and David A. Smith, Penn Hills, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 19, 1971, Ser. No. 190,480
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 4 Claims



A method of fabricating a container wall having an integral opening device by providing a metal sheet having an adhesive material secured to one surface thereof. The adhesive secures a continuous protective layer to the metal sheet. The protective layer is selected from the group consisting of partially crystalline polyolefin, partially crystalline polyolefin-ethylene copolymers, polyethylene acrylate and ionomers of polyolefin. Scoring the sheet to define a removable sector therein while preventing fracture of the adhesively secured protective layer. Subsequently heating the composite metal sheet to a temperature of about 275° to 375° F for a period of about 0.2 second to 4 minutes and preferably about 300° to 350° F for about 0.5 to 3 minutes. The protective layer is stress relieved by this thermal treatment which substantially completely eliminates microvoids established in the protective layer during the scoring operation. Effecting the heating operation in such a fashion as to improve adhesive bonding of the protective layer, resist diaphragming of the protective layer and reduce feathering of the protective layer along the line of severance when the removable sector is fractured.

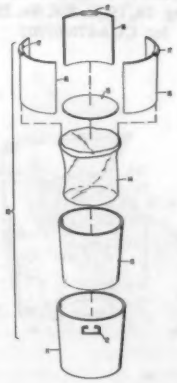
A container wall structure made by the process of this invention including the adhesive being selected from the group consisting of epoxy, polyester and polyurethane. The protective layer having a crystallinity in excess of about 50 percent. The adhesive bond between the protective layer and the metal sheet removable sector being of greater strength than the shear strength of the protective layer in regions underlying the score line to prevent substantial diaphragming and to limit feathering to less than about one-thirty-second inch.

3,762,599

TRASH CONTAINER FOR TRASH COMPACTOR

Joseph F. Bourgeois, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed July 6, 1971, Ser. No. 159,760
Int. Cl. B65d *25/14*
U.S. Cl. 220—63 R 4 Claims



A trash container for use in a trash compactor employs a round outer container in which is nested first a plastic liner and then a disposable plastic bag. A number of arcuate shield plates placed about the side wall of the container and over the disposable bag protect the latter during compaction of trash.

3,762,600

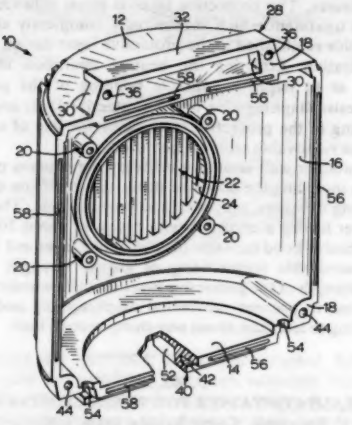
STEREO SPEAKER DESIGN

Charles E. Kreutzweiser, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchner, Ontario, Canada

Filed Oct. 4, 1972, Ser. No. 294,774
Int. Cl. B65d *21/00*
U.S. Cl. 220—97 R 10 Claims

This invention provides an enclosure which can be releasably affixed to others of its kind through handle means on one enclosure and a handle-receiving base structure on the other enclosure. The handle means projects upwardly from

the top of one enclosure and includes a bar element which overhangs the structure which supports the bar element. The

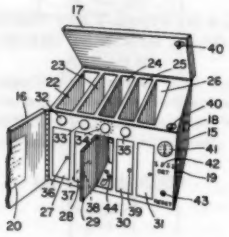


base structure of the other enclosure defines a track into which the bar element can slide.

3,762,601
CABINET FOR DISPENSING MEDICINES AT PREDETERMINED TIMES

John T. McLaughlin, 655 N. Central Ave., Glendale, Calif.

Filed Aug. 14, 1972, Ser. No. 280,655
Int. Cl. A47b *67/02*
U.S. Cl. 221—2 **7 Claims**



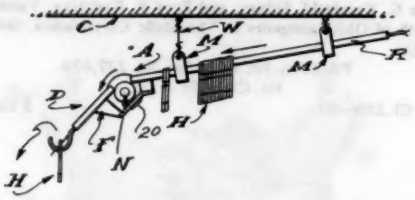
A cabinet containing individual compartments each with an individual time lock for holding various doses of prescribed medicines respectively is positioned adjacent a given patient's bed. The individual time locks are programmed to open at given times during a 24 hour period at which the medicine in the corresponding compartment is to be given to the patient. A signal light advises a nurse whenever any one of the compartments is unlocked. It is thus assured that the correct dose of the correct prescribed medicine is given to the correct patient at the correct given time for that particular medicine.

3,762,602
COAT HANGER DISPENSER

Edwin E. Wasil, 7814 State St., Huntington Park, Calif.

Filed Mar. 13, 1972, Ser. No. 234,216
Int. Cl. B65h *3/00*
U.S. Cl. 221—195 **6 Claims**

A coat hanger dispenser comprising an elongate rail over which a supply of coat hangers is hooked, an advancing means at one end of the rail intermittently operable to advance a hanger from engagement on and longitudinally outward from said one end of the rail and delivery means extending from the said end of the rail and the advancing means to releasably hold a hanger advanced in a convenient location and disposition for manual engagement.

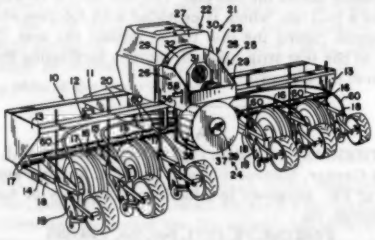


The advancing means is motor driven and is under control of a switch at the delivery means and operated by a hanger engaged with the delivery means.

3,762,603
SEED DISPENSER FOR PLANTERS

Jack L. Bauman, and Vedick A. Erickson, both of Naperville, Ill., assignors to International Harvester Company, Chicago, Ill.

Filed July 13, 1971, Ser. No. 162,091
Int. Cl. B65g *15/02*
U.S. Cl. 221—211 **2 Claims**



A pneumatic seed dispenser assembly mounted on a traveling frame, comprising in a compact longitudinal alignment centrally of the frame, a seed hopper, an air blower and a rotary seed selector drum sharing a common wall with the blower and receiving air under pressure therefrom. Seed is fed from the hopper to the drum by a seed delivery tube which is disposed below the blower and connected at one end to the drum and at its other end to a hopper discharge outlet which is laterally displaced from the center of the hopper.

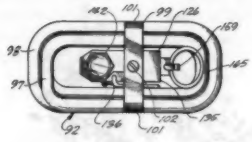
3,762,604
SURVIVAL SUPPORT DEVICE

David E. Shonerd, 1025 Winther Way, Santa Barbara, Calif.

Filed May 10, 1971, Ser. No. 141,781
Int. Cl. A62b *18/02*
U.S. Cl. 222—5 **12 Claims**

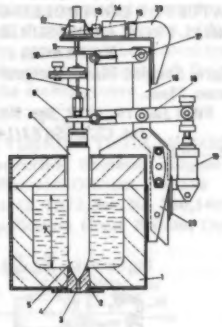
Apparatus for providing a breathable gas to an individual in an emergency situation is provided in practice of this invention. The apparatus contains a breathable mixture of gas for a prolonged period and, when actuated, provides about 10 minutes of gas to the user. The gas is contained at high pressure in a lightweight long tube coiled about a combined fill valve, pressure regulator, flow control, pressure gauge, and actuation mechanism. This assembly is in a canister and actu-

ated by perforating a pressure containing diaphragm between the gas storage reservoir and the pressure regulator. The canister is connected to the back of a plastic hood that is fittable over a user's head so that the canister is arranged during use at the nape of the user's neck so as not to interfere with



any emergency operations and, for example, to permit the user to wear a helmet or the like. Gas from the canister passes into the hood at a substantially constant rate and is vented as required through a check valve. An elastic band around the person's neck limits leakage.

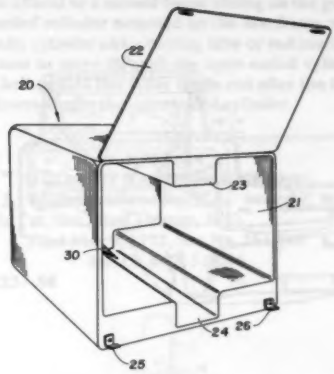
3,762,605
CONTROL DEVICE FOR STOPPER OF A CASTING CONTAINER
William W. Seaton, 2290 Baker Rd., Dexter, Mich.
Filed June 1, 1971, Ser. No. 148,794
Claims priority, application Switzerland, June 8, 1970, 8556/70
Int. Cl. B22d *37/00*
U.S. Cl. 222—70 **8 Claims**



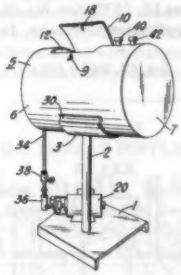
Disclosed is a stopper container including a stopper rod which is coupled with a lifting and lowering mechanism. The vertical displacement of the mechanism is controlled by an adjustable limit stop the vertical position of which is adjusted for a predetermined time period by a programmed control device, defining the desired amount of the poured-out liquid metal.

3,762,606
CONTAINERIZED LIQUID DISPENSING SYSTEM
Oscar A. Lande, 120 Jayne Blvd., Port Jefferson Station, N.Y.
Filed Aug. 11, 1971, Ser. No. 170,757
Int. Cl. B67b *7/28*
U.S. Cl. 222—88 **7 Claims**

A container and unique valving system therefor, adapted for mounting with a dispensing system. The structure of the container and the valving system permit safe, convenient, and uncontaminated handling of fluids.



3,762,607
FLUID SYSTEM
Edward A. Coletta, 465 Colonial Dr., Monroeville, Pa.
Filed Mar. 14, 1972, Ser. No. 234,511
Int. Cl. B67d *5/60*
U.S. Cl. 222—185 **2 Claims**

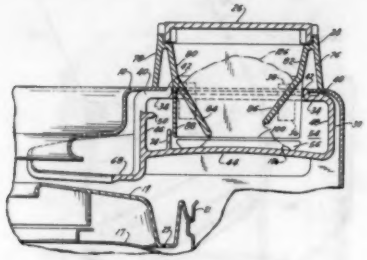


A cylindrical tank, within which there is a ball float actuated water make-up valve, is supported on a saddle that is attached to a single pedestal fixed to a base. The base supports a pump connected fluidly to the tank by piping which includes a strainer and shut-off valve. A hinged cover on an acess opening in the tank affords access to the valve within the tank.

3,762,608
DRY DETERGENT DISPENSER
Robert B. Beare, Herrin, and Billy Gene Jack, Johnson City, both of Ill., assignors to Fedders Corporation, Edison, N.J.
Filed Oct. 6, 1971, Ser. No. 186,933
Int. Cl. B67d *5/54*
U.S. Cl. 222—193 **7 Claims**

A molded body has a crowned rectangularly shaped bottom and a water inlet and outlet positioned to establish a water flow longitudinally over the crowned surface and into a wash basket. A rectangularly shaped hopper is positioned above the crowned surface for storing and controllably dispensing dry detergent onto the crowned surface. An overflow is formed in a side wall of the body for limiting the level of the water flowing through the body. An opening in an inlet passage functions as an air break to prevent siphoning of water back into the potable water supply. A spill tray directs water from the overflow and the inlet passage opening onto the tub top and thence

into the wash tub to prevent spillage. Baffle members formed on both the bottom and the hopper cooperate to form a lon-



gitudinal passage from inlet to outlet and to divert air turbulence from the dry detergent.

3,762,609

APPARATUS FOR INTRODUCING A METERED AMOUNT OF SAMPLE LIQUID INTO A CONTINUOUS STREAM OF A CARRIER LIQUID

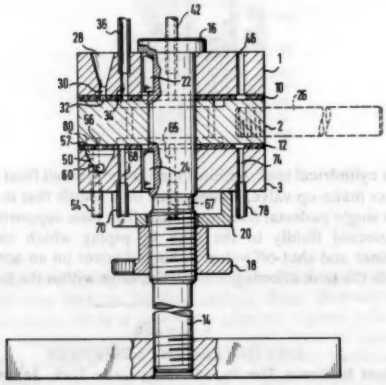
Alexander Hagen, Tutzing; Dirk Mewes, Gauting; Wolfgang Gruber, Garatshausen, and Hans Ulrich Bergmeyer, Tutzing, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Filed June 12, 1972, Ser. No. 261,701

Claims priority, application Germany, June 18, 1971, P 21 30 287.4

Int. Cl. B67d *5/54*

U.S. Cl. 222—194 10 Claims



A sample to be analyzed is injected into a stream of carrier liquid by coupled dual valves in two branches of the stream. One of the two valves is open and the other closed at any one time. The bore of the closed valve provides a metering cavity which is filled with the sample to be analyzed, and the sample is injected by simultaneously closing the previously open valve and opening the sample-bearing closed valve. The specific, dual valve arrangement disclosed has a single movable disc arranged between two stationary discs, the discs being provided with passages filled and emptied in the necessary sequence when the movable disc is rotated.

3,762,610

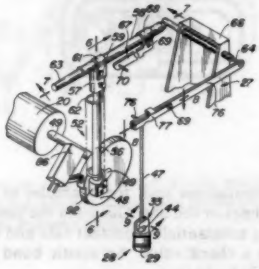
MIXING AND MEASURING ARRANGEMENT FOR BEVERAGE DISPENSER

Raymond E. Uttech, Watertown, Wis., assignor to Karma Division of Brandt, Inc., Watertown, Wis.

Filed Feb. 28, 1972, Ser. No. 229,719

Int. Cl. G01f *11/06*

U.S. Cl. 222—309 7 Claims



A dispensing device having a pump and pump actuating means, associated with a tank containing a concentrated syrup. The pump and actuating means therefor are constructed so as to be selectively adjustable to discharge a predetermined amount of syrup from the storage tank at each cycle thereof. The discharged syrup is admixed with a diluting liquid in a mixing chamber before discharge to a dispensing cup.

3,762,611

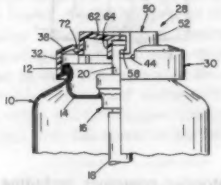
APPARATUS FOR CONTROLLING DISCHARGE OF MATERIAL FROM A PRESSURIZED DISPENSING PACKAGE

Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jan. 19, 1972, Ser. No. 218,946

Int. Cl. B65d *83/14*

U.S. Cl. 222—402.13 9 Claims

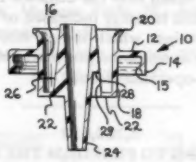


A one-piece, molded actuator structure for a pressurized dispensing package has a base portion for attachment to the container, an annular flange portion that extends inwardly from the top of the base portion and an actuator portion disposed in the opening defined by the flange. The actuator portion includes a coupling for connection to a valve stem, a discharge passage in communication with the valve coupling, and a pair of diametrically opposed webs that extend between the actuator portion and the inner periphery of the flange portion. Application of axial force to the actuator portion flexes the webs and flange portion in a bellows type of action to permit dispensing of material from the package.

3,762,612
DUAL SEAL POUROUT FITMENT AND CLOSURE COMBINATION

Ira H. Miller, Sun City Center, Fla., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 31, 1972, Ser. No. 222,160
Int. Cl. B67d 3/00
U.S. Cl. 222—479 2 Claims



A one-piece pourout fitment and a closure member, in combination with a liquid containing container, incorporating an improved sealing configuration. A pourout fitment is fabricated in one piece and includes a disc-shaped member having a central opening, a peripheral bottle neck engaging member, an axial, hollow, pouring tube defining the periphery of the central opening, and an axial hollow, vent tube, concentrically located with respect to the pouring tube and connected thereto by a plurality of ribs. The upper portion of the pouring tube is outwardly flared and terminates in a substantially vertical section. The closure member has an upper panel and a depending skirt with interior, bottle neck engaging threads molded therein. An annular sealing groove is defined by annular projections depending vertically downward from the closure upper panel. The inner wall of the sealing groove is tapered to match the flare of the upper portion of the pouring tube. The outer wall of the sealing groove is substantially vertical. In operation, the pourout fitment member is engaged on the neck of a bottle. The closure member is then engaged with threads on the bottle neck. When the closure member is fully engaged, the bottle contents are sealed due to the engagement of the flared portion of the pourout fitment with the tapered inner wall of the sealing groove and the vertical end portion of the flared portion of the pourout fitment with the substantially vertical outer wall of the sealing groove.

3,762,613
DEVICE FOR TURNING TUBULAR FABRICS

Fred Hardaker, Chadderton, England, assignor to Andrew Baron Limited, Hollinwood, Oldham, England

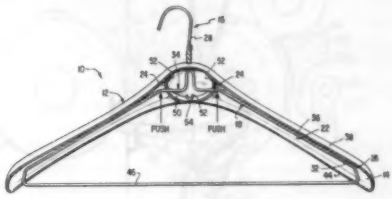
Filed Sept. 18, 1972, Ser. No. 290,140
Claims priority, application Great Britain, Oct. 19, 1971, 48,636/71
Int. Cl. A41h 43/00
U.S. Cl. 223—40 4 Claims

Apparatus for turning a tubular article such as a tie or belt inside out comprising vertical guide rods or tubes affixed adjacent their lower ends to a frame, an hydraulic cylinder being supported by the frame operating a piston rod the upper end of which is affixed to a second frame sliding on the guide rods, an open ended cylinder mounted on the first frame parallel to the hydraulic cylinder and a turning tube or rod carried by the second frame to move through the open ended cylinder with the tie or belt to turn this latter inside out after the tie or belt has been inserted over the open ended cylinder.

3,762,614
GARMENT HANGER ASSEMBLY

Thomas J. Musante, Newark, N.J., assignor to Necessa Products Co., Inc., East Orange, N.J.

Filed May 9, 1972, Ser. No. 251,745
Int. Cl. A47j 51/086
U.S. Cl. 223—98 11 Claims



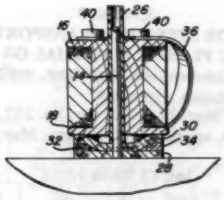
A hollow coat hanger attachment is formed with integral, coacting fulcral engagement areas and cam surfaces which deflect portions of a resilient wire hanger assembled therewith to provide a spring restoring force for camming the attachment and wire hanger into firm interlocking engagement.

Alternate embodiments employ abutments and/or removable locking tabs which positively preclude inadvertent disassembly of the attachment and wire hanger under all conditions except a deliberate disassembly procedure.

3,762,615
SEWING MACHINE THREAD SUPPLY SPOOL FRICTION BRAKE

Dennis L. McCallister, 331 Hall St., Wayne, W. Va.

Filed Apr. 20, 1972, Ser. No. 245,846
Int. Cl. A41h 31/00
U.S. Cl. 223—106 7 Claims



A thread spool supporting spindle assembly for mounting on the conventional spool pin atop a sewing machine. The spindle assembly includes structure by which a light friction drag is applied to the spool of thread supported from the spool pin and thereby prevents inertia of the supported spool of thread tending to cause the thread spool to coast ahead when operation of the associated sewing machine is terminated after operating at high speed, such overrunning of the thread spool causing excessive slack in the thread which can subsequently result in thread breakage when the sewing machine is again started at high speed. The spindle assembly of the instant invention may be utilized on any sewing machine which includes a vertical, or substantially vertical, spool pin located atop the sewing machine and includes felt disk structure for initial downward displacement over the spool pin with the diameter of the center opening in the felt disk structure being smaller

than the diameter of the pin thereby affording a friction fit between the felt disk structure and the pin so that a thread spool disposed over the pin above the felt disk will drop by gravity into engagement with the felt disk assembly to thus frictionally resist overrunning of the thread spool.

3,762,616

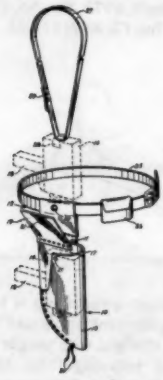
CAMERA HOLSTER

Frank H. Brunstetter, San Antonio, Tex., assignor to Invention Services Corporation, Denver, Colo.

Filed May 3, 1971, Ser. No. 139,496

Int. Cl. A45c *11/38*

U.S. Cl. 224—26 R **8 Claims**



An upwardly opening holster is designed to carry a camera or other similarly shaped device of the type provided with a pistol grip and for this purpose has a flap which may be detachably secured over the open end of the holster to retain a camera therein; alternately, the flap can be detachably secured away from the holder's open end so that the camera may be readily withdrawn therefrom. A belt loop is formed in the holster and a belt is included for attaching the holster to an individual. A shoulder type safety strap or bandolier can be secured to the camera pistol grip outwardly of the holster to prevent accidental dropping of the camera when it is withdrawn from the holster.

3,762,617

APPARATUS FOR STEPWISE TRANSPORT OF WEBS OF SYNTHETIC PLASTIC MATERIAL OR THE LIKE

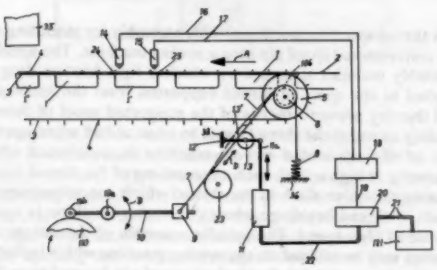
Hans Matthis, Kleinheppach, Germany, assignor to Hofliger & Karg, Waiblingen Germany

Filed Mar. 22, 1972, Ser. No. 237,130

Claims priority, application Germany, Mar. 24, 1971, P 21 14 306.6

Int. Cl. B65h *23/18*

U.S. Cl. 226—32 **10 Claims**



Apparatus for stepwise transport of a series of interconnected synthetic thermoplastic containers employs an endless conveyor the upper stretch of which supports and advances the containers past a set of detectors which scan the position of the nearest container during each interval of dwell of the conveyor. The conveyor is driven by a chain which is trained over a gear serving to rotate one sprocket wheel of the conveyor by means of a one-way clutch. The chain is moved lengthwise back and forth by an oscillatory lever and a helical spring. When the spacing between successive containers changes, signals from the detectors cause a deflector to flex the chain with the result that the distance through which the conveyor is advanced is either increased or reduced until the next-following container which moves into the range of the detectors occupies an optimum position. The deflector can be actuated by a fluid-operated motor.

3,762,618

DEVICE ENABLING TO PERFORM THE REWINDING OF THE FILM IN A SOUND MOTION PICTURE PROJECTOR

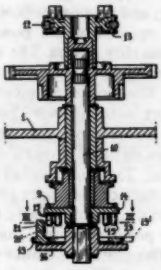
Piero DeRossi, Corso Giovanni Lanza 55, Torino, Italy

Filed May 24, 1972, Ser. No. 256,542

Claims priority, application Italy, July 31, 1971, 69586

Int. Cl. G03b *1/24*

U.S. Cl. 226—76 **10 Claims**



A device for allowing rewinding of the film in a sound motion picture projector, wherein the drive sprocket intended for uniformly driving the film on the pick-up members of the sound track is idly mounted on its driven shaft, and a unidirectional joint is inserted between the shaft and the sprocket for connecting rigidly both parts in the forward direction of rotation and for allowing free rotation of the sprocket when the shaft rotates in reverse direction.

3,762,619

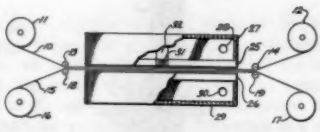
APPARATUS FOR HOLDING TWO FILMS IN INTIMATE CONTACT WITH EACH OTHER

Minard A. Leavitt, Sepulveda, and Poul B. Roulund, El Toro, both of Calif., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Division of Ser. No. 46,430, June 15, 1970, Pat. No. 3,667,845, which is a continuation-in-part of Ser. No. 27,690, April 13, 1970, abandoned. This application Mar. 23, 1972, Ser. No. 237,580

Int. Cl. B65h *17/32*

U.S. Cl. 226—109 **4 Claims**



A contact printer has two closely spaced adjacent platens with dissimilar patterns of fluid passages. Fluid is forced through the passages to form between the platens and the adjacent film surfaces fluid cushions that hold the films in inti-

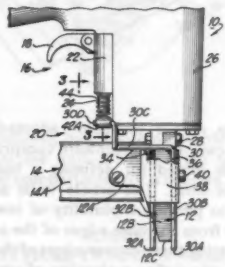
mate contact with each other. The passages are sufficiently concentrated and so arranged to support the films between the platens without appreciable lateral movement. In the preferred embodiment, the platens are slabs of microporous material. In another embodiment, the platens are slabs of non-porous material having discrete holes.

3,762,620

SAFETY ASSEMBLY FOR FASTENER DRIVING TOOL

Bernard W. Geist, Melrose Park, Ill., assignor to Fastener Corporation, Franklin Park, Ill.

Filed May 15, 1972, Ser. No. 253,449
Int. Cl. B27f 7/22
U.S. Cl. 227—8 **10 Claims**



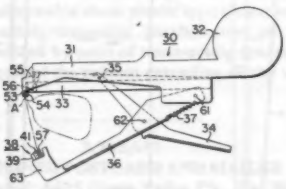
A safety mechanism for a pneumatic fastener driving tool prevents operation of the tool when a nosepiece structure containing a fastener discharging opening is not disposed flush against and covered by a workpiece. This avoids "free flight" of power driven fasteners resulting from a tool being disposed at an angle adjacent an edge of a workpiece so that the fastener passes through only a portion of the workpiece. To accomplish this, the safety assembly includes two workpiece engaging members disposed on opposite sides of the nosepiece structure and coupled to opposite ends of a lever centrally fulcrumed on an operator for the tool firing control. Unless both members are elevated by engagement with the workpiece, the lever does not operate the control. To reduce the chances of tool operation when the tool is tipped in the plane of the workpiece engaging members, these members are so formed as to provide only point or small area contact with the workpiece.

3,762,621

BINDER FOR GRAPE VINES

Mitsuo Nishikawa, Takasaki, Japan, assignor to Max Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1971, Ser. No. 195,588
Int. Cl. B25c 5/02
U.S. Cl. 227—76 **11 Claims**



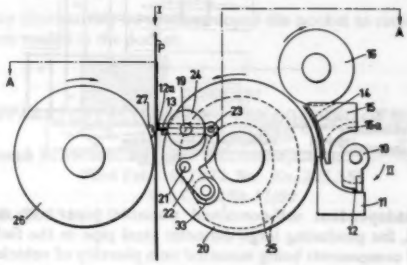
A device for binding objects, such as grape vines, consisting of a presser equipped with a tape container at its rear end and a base plate which is hinged to the presser and opens and closes through the operation of a handle. By a first operation of the handle, a pawl at the front end of the base plate draws out a specified length of tape from the front end of the presser, and the tape thus drawn out is pressed against and rolls therein an object to be bound. By a second operation of the handle, both ends of the tape are bound together to make a loop and are cut off to accomplish the binding operation.

3,762,622

APPARATUS FOR STITCHING A CONTINUOUSLY RUNNING WEB

Arne Ingvar Noren, Stamgatan, Sweden, assignor to Toleransaktiebolaget, Alvsjo, Sweden

Filed Mar. 31, 1971, Ser. No. 129,795
Claims priority, application Sweden, Apr. 6, 1970, 4664/70
Int. Cl. B27f 7/12
U.S. Cl. 227—81 **7 Claims**



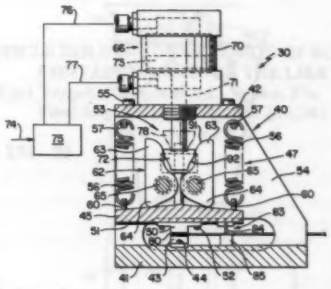
Apparatus for high speed stitching of a continuously running web, comprising a rotatable stitching cylinder and mounted therein a stitching arm taking along a cut wire length from a cutting device, forming said wire length in to a staple by coaction with a forming device, and finally pressing the staple through the web to be stitched and clinching the staple by co-action with a clinching means disposed on the opposed side of the web when the stitching arm and the web are maintained at the same lateral speed.

3,762,623

PRESSURE WELDING APPARATUS

Hans A. Brunner, Chester, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Apr. 10, 1972, Ser. No. 242,427
Int. Cl. B23k 21/00
U.S. Cl. 228—3 **16 Claims**

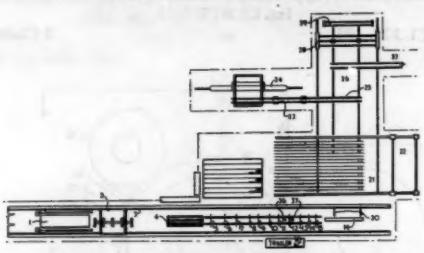


An apparatus for cold welding at least one electrical lead on a strip of electrically conductive material which is adapted to be wound in coil form to make a strip conductor coil. The apparatus has a pair of cooperating dies and a pneumatically actuated cam system for urging one of the dies toward the other die to thereby cold or pressure weld the lead against the strip upon interposing the lead and strip between the cooperating dies.

3,762,624
PORTABLE PIPE MILL

Douglas L. Sprung, W. Vancouver, British Columbia, Canada, assignor to International Portable Pipe Mills Ltd., Calgary, Alberta, Canada

Filed June 21, 1971, Ser. No. 155,148
Int. Cl. B23k 1/20
U.S. Cl. 228—15 6 Claims

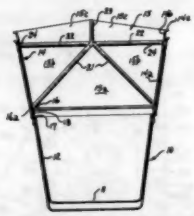


An independent self-contained portable pipe mill and method, for producing large diameter steel pipe in the field, the mill components being mounted on a plurality of vehicles, such as highway trailers, that may be moved to the desired site and there connected together when arranged in alignment and levelled in true assembly line. Provision is made for over-width components of the forming mill being mounted on turntables to enable their being rotated into longitudinal position for transporting. Novel features include equipment for handling and sizing the steel plates and square edging the same in a stack, welding apparatus, a hydraulic-mechanical end expander, a low-weight frameless hydraulic expander and a precision pipe end finisher. The mill is provided with a knockdown type enclosure and has its own fuel powered driving mechanism and electric generator.

3,762,625
PLASTIC SEAMLESS GABLE TOP CONTAINER

Albert B. Mojonnier, Chicago, Ill., assignor to Albert Mojonnier Inc., Franklin Park, Ill.

Filed Jan. 15, 1970, Ser. No. 3,075
Int. Cl. B65d 5/72
U.S. Cl. 229—17 G 8 Claims

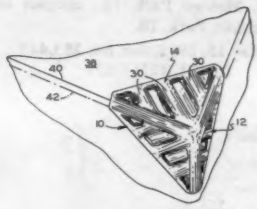


A seamless container in which a cup-shaped article is drawn from a sheet of plastic material and has a lower cup-shaped body portion with upwardly diverging side walls, and an upper gable portion with side and end walls integral with and diverging upwardly from the upper ends of the body side walls and foldable to form a gable top for the body portion. The cup-shaped article has a step formed at the junction of the gable side and end walls with the body side walls to rigidify the upper end of the body portion and to facilitate in folding of the gable portion. Channels are formed in the gable top along gable fold lines to facilitate folding of the gable top.

3,762,626
CORNER PROTECTOR

William T. Dorsey, P.O. Box 968, Corvallis, Oreg.

Filed Feb. 22, 1972, Ser. No. 228,219
Int. Cl. B65d 5/60
U.S. Cl. 229—14 C 10 Claims

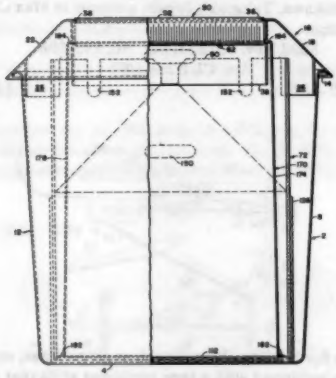


A molded pulp corner protector adapted for insertion between shipping cartons and furniture comprises three triangular-shaped walls joined for defining a hollow article of pyramidal exterior form. The article walls are indented at regular intervals to provide a plurality of inwardly directed ribs which extend from the base edges of the article, substantially up to the slanting three corner edges of the pyramid. The inwardly directed ribs define a plurality of grooves including three inner corner grooves communicating at an inner apex, and side grooves which communicate with the corner grooves. The article is truncated at the lower corners such that the corner grooves also communicate with the exterior of the article.

3,762,627
RECEPTACLE FOR WASTE MATERIAL

Thorvald S. Ross, Jr., Lincoln, and Dante V. Consalvo, Everett, both of Mass., assignor to said Ross by said Consalvo

Division of Ser. No. 20,974, March 19, 1970, Pat. No. 3,675,810, which is a continuation-in-part of Ser. No. 813,477, April 4, 1969, abandoned. This application July 12, 1971, Ser. No. 161,879
Int. Cl. B65d 5/02, 5/46
U.S. Cl. 229—37 R 3 Claims



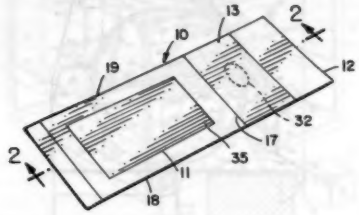
The invention is a combined holder-container system and the container thereof, for the compaction, storage, segregation, and eventual disposal of compacted trash. It comprises an outer holder, an inner removable and disposable container, a removable protective inner shield or liner, and an apertured cover adapted to prevent unwanted egress of glass shards, etc.

3,762,628

COUPON-CONFINING BAG, METHOD AND APPARATUS

Cassius E. Sargent, Chicago, Ill., assignor to PPC Industries Inc., Wheeling, Ill.

Filed May 17, 1971, Ser. No. 143,889
Int. Cl. B65d *31/12*
U.S. Cl. 229—56 3 Claims



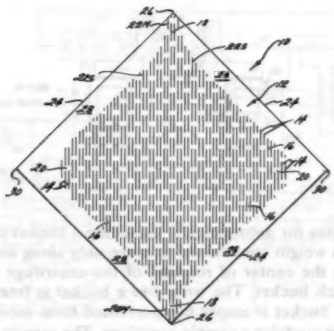
A coupon-confining bag wherein flexible transparent thermoplastic sheets are united along three sides to provide a separate interior compartment for a coupon.

3,762,629

LATTICED PRODUCE WRAPPER

Edward C. Bruno, Denver, Colo., assignor to Mario Manetti, Chicago, Ill.

Filed July 27, 1971, Ser. No. 166,363
Int. Cl. B65d *65/00*
U.S. Cl. 229—87 F 9 Claims



This invention relates to an improved latticed produce wrapper of the disposable sheet plastic type characterized by a series of alternately staggered parallel rows of integrally formed loops defined by pairs of transversely spaces slits with those in the center of the pattern extending all the way to the opposite edges.

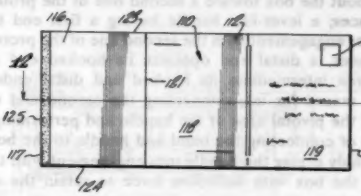
3,762,630

COMBINED POSTCARD AND MAILER

Andrew S. Braznell, 6425 Green Valley Cir., No. 300, Culver City, Calif.

Filed May 20, 1971, Ser. No. 145,208
Int. Cl. B65d *15/00*
U.S. Cl. 229—92.8 6 Claims

Two cards are joined at their edges to make a pocket between the cards to receive flat mailable items. One card exterior has a pictorial area for a scene, illustration, or greeting, and a message and address and stamp area is on the opposite card exterior. A flap at an opening in the face or end of the mailer cooperates with sealing means, such as a tab or adhesive, to close the opening. A tear tab, seam perforations, a thread, or a tab grip at the start of double parallel perforations



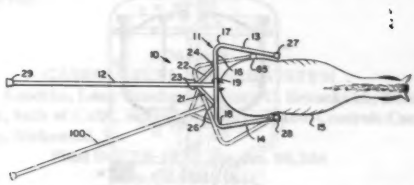
may alternatively be used to reopen the pocket to remove the item mailed in the pocket.

3,762,631

APPARATUS FACILITATING THE LOADING OF HORSES INTO TRAILERS

Joseph R. Jurkoic, 88 Ledge Rd., Berlin, Conn.

Filed Feb. 10, 1972, Ser. No. 225,152
Int. Cl. B68b *11/00*
U.S. Cl. 231—2 R 10 Claims



A bifurcated frame having an elongated handle attached thereto loosely embraces the rump and hind quarters of a horse. The handle provides separation of a handler from the rearward kicking range of the horse, and also provides leverage in turning and guidng the horse embraced by the bifurcated frame, the apparatus thereby being useful in loading the horse into a trailer or other enclosure.

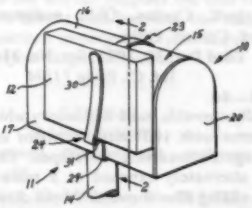
The legs of the bifurcated frame are preferably toed-in for better control of the horse. The separation of the legs is preferably adjustable for properly embracing horses of various sizes. The handle is preferably detachable from the bifurcated frame for compact storage.

3,762,632

ARTICLE HOLDER FOR EXTERIOR OF BOX FOR CONTAINING MAIL OR THE LIKE

Henry Carl Voegeli, 918 Gibbs Rd., Venice, Fla.

Filed Aug. 31, 1972, Ser. No. 285,342
Int. Cl. A47g *29/12*
U.S. Cl. 232—33 10 Claims



The present invention provides a device for holding an article, such as a package, periodical or the like, that can be readily connected to the exterior of a box for containing mail or the like, having at least two spaced apart, generally parallel,

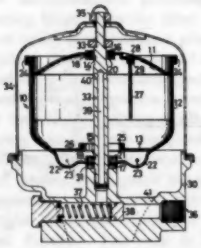
protruding surfaces. Basically, the device comprises: a band having a first end that is hooked for engagement with one of the protruding box surfaces and a second end that can be extended about the box toward a second one of the protruding box surfaces; a lever-like handle having a first end that is hooked for engagement with the second one of the protruding box surfaces, a distal end opposite its hooked end and a pivotal area intermediate its hooked and distal ends; and yieldable means for interconnecting the second end of the band and the pivotal area of the handle and performing dual functions of connecting the band and handle to the box and also yieldably urging the handle into engagement with the exterior of the box with sufficient force to retain the article therebetween.

3,762,633

ROTOR FOR REACTION ROTARY OIL FILTER

Kenichi Ishii, Yokohama, Japan, assignor to Tokyo Roki Kabushiki Kaisha, Kawasaki-shi, Kanagawa-ken, Japan

Filed Apr. 6, 1972, Ser. No. 241,608
Int. Cl. B04b 9/00
U.S. Cl. 233—23 R 3 Claims



A rotor consisting of an upper casing and a lower casing, the skirts of said both casings being joined in lapped relation and curled up together convolutely to securely unite them, said rotor having provided at the upper and lower positions on its center axis the upper and lower annular bearings the inner diameters of which are selected to satisfy the relation:

$$d_2 = \sqrt{(4W/\pi P) + d_1^2 (1 \pm K)}$$

where:

d_1 is inner diameter of the upper annular bearing;

d_2 is inner diameter of the lower annular bearing;

P is oil pressure in the rotor;

W is sum of empty weight of the rotor and weight of oil in said rotor;

K is correction value defined within the range of $-0.08 < K < +0.08$

said rotor also having detachably provided therein a gauge whereby one can readily know when to replace the rotor.

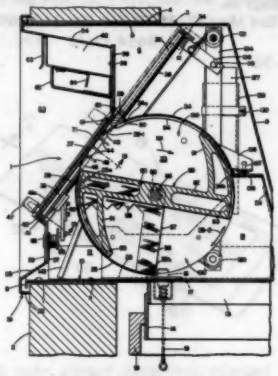
3,762,634

ROTARY DEPOSITORY CONSTRUCTION

Paul A. Leipelt, Canton, Ohio, assignor to Diebold, Incorporated, Canton, Ohio

Filed Dec. 30, 1971, Ser. No. 214,079
Int. Cl. B65g 1/04
U.S. Cl. 232—44 14 Claims

A manually operable bank depository which has a two-compartment rotor with 180° movement for each operation for handling bags or receiving envelopes. The rotor compartments are alternately exposed at a main housing opening closed by a sliding door movable in one direction for exposing first a portion and then all of the main housing opening to receive envelopes or bags. There are cam release and control mechanisms and interlocks interacting between the rotor, drive mechanism and door connecting the rotor with the door for imparting movement to the rotor initiated by door movement. The controls prevent reopening of the sliding door until fully closed after closing movement of the door covers the main opening. The sliding door is angularly located for easy



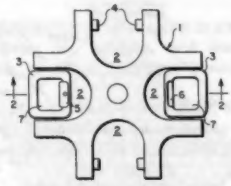
operation and for minimum wall thickness requirements for installing the depository.

3,762,635

APPARATUS FOR BALANCING A BUCKET CENTRIFUGE ROTOR

James J. Hankey, Milton, Mass., assignor to Damon Corporation, Needham, Mass.

Filed Apr. 14, 1971, Ser. No. 133,947
Int. Cl. B04b 9/00
U.S. Cl. 233—23 A 2 Claims



Apparatus for automatically balancing a bucket centrifuge wherein a weight constrained to move only along an axis that intersects the center of rotation of the centrifuge is placed within each bucket. The weight in a bucket is free to move when the bucket is empty but prevented from moving when the bucket contains a sample container. The sample and sample container and the mass of the weight are regulated so that the moment of the weight in its radially outermost position equals the moment of the sample, sample container, and the weight in its radially innermost position.

3,762,636

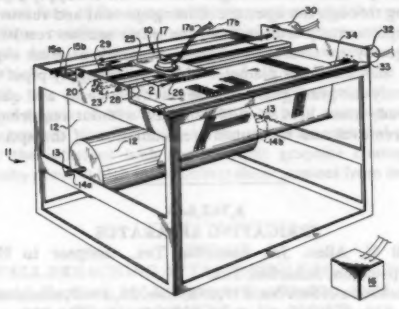
APPARATUS AND METHOD FOR PRODUCING A SILK SCREEN MATRIX

Leland C. Christensen, Mountain Green, Utah, assignor to Robert Christensen, Salt Lake City, Utah, a part interest

Filed Jan. 25, 1971, Ser. No. 109,212
Int. Cl. B41c 1/14
U.S. Cl. 234—2 1 Claim

A method and apparatus for producing a silk screen matrix wherein a master, having contrasting characters scribed thereon that are to be reproduced is scanned by an electronic scanning device. The scanning device converts light or dark images on the master to electronic impulses. These impulses are transmitted to a punching apparatus, where they are used to activate a punch, which may be pneumatically or mechanically powered. The punch either includes a single die that travels across a matrix of paper, or other suitable material,

punching holes corresponding to the light or dark areas on the master as it travels, or it includes a plurality of individually operated dies arranged in series across the mat and arranged such that operation of the dies in response to sensing of light



or dark by the scanning device will punch holes through the mat. Either disclosed apparatus will thereby produce a punched matrix suitable for use in a silk screen printing operation.

3,762,637

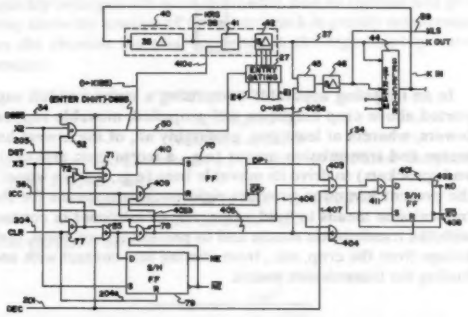
DUAL-FUNCTION KEYS FOR SIGN CHANGE AND CORRECTION OF ERRONEOUS ENTRIES

Jorge Hernandez, Oakland, Calif., assignor to SCM Corporation, New York, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,257

Int. Cl. G06f *13/00*

U.S. Cl. 235—156 **35 Claims**



An electronic calculator of small size with a limited number of keys may include logic such that a second operation of a decimal point key during entry causes a sign change and/or such that operation of a total key during entry only causes a clearance of an erroneous entry and selection of a positive sign.

3,762,638

THERMOSTATIC MIXING VALVE

Derek John Goldsmith, Sevenoaks, England, assignor to Derek John Goldsmith and Derek Francis Pratt, both of Kreuzlingen, Switzerland

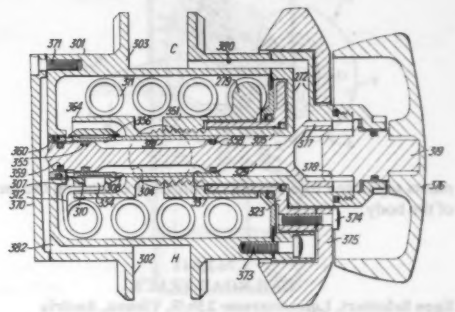
Continuation-in-part of Ser. No. 851,357, Aug. 19, 1969, abandoned. This application May 21, 1971, Ser. No. 145,691

Claims priority, application Great Britain, Aug. 26, 1968, 40,623/68; Mar. 11, 1969, 12,871/69; May 4, 1971, 12,971/71

Int. Cl. G05d *23/13*

U.S. Cl. 236—12 **17 Claims**

The invention relates to a thermostatic mixing valve in which a coiled coil laminated strip of bimetal is used as a temperature responsive element to control the ratio of admixture of hot and cold fluids. Preferably the element is located within a space provided with means for admitting mixed fluid into the space at or near one end of the temperature responsive ele-



ment and the outlet port is provided from said space at a position intermediate the ends of the temperature responsive element, whereby a changed velocity feed back control function is achieved.

3,762,639

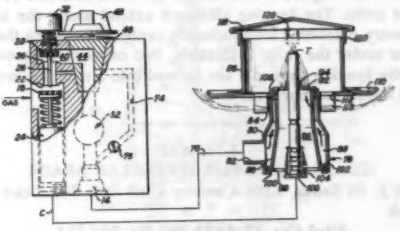
GASEOUS FUEL BURNER SYSTEM

Jay R. Katchka, Long Beach, and Henry C. Braucksick, Buena Park, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 15, 1970, Ser. No. 98,246

Int. Cl. F23q *9/14*

U.S. Cl. 236—15 A **16 Claims**



A gaseous fuel burner system wherein a single burner is designed to operate at dual rates in accordance with the fuel flow supplied by a combination control device which is operated thermostatically and which includes the features of a manual on-off valving mechanism and a burner flame responsive safety valving mechanism. A single conduit between the control device and the burner supplies the fuel flow at both rates of flow to the burner that provides two flame patterns with each flame pattern impinging on the flame responsive element of the safety valving mechanism.

3,762,640

RAIL ANCHOR

Laurence W. Cantwell, Hinsdale, Ill., assignor to Portec, Inc., Oak Brook, Ill.

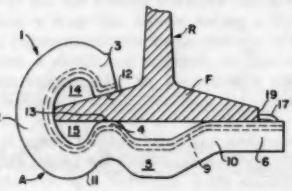
Filed Nov. 23, 1971, Ser. No. 201,367

Int. Cl. E01b *13/02*

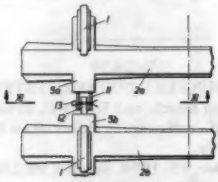
U.S. Cl. 238—327 **6 Claims**

A rail anchor includes a hook section at one end having spaced twin jaws elastically engaging one flange of a rail base while a shoulder on the opposite heel section engages the

sidewall of the other rail base flange. The body of the anchor is of channel construction and includes a pair of inner wall segments separated by a medial corrugation extending the length of the body.

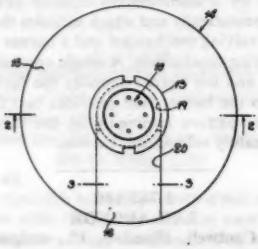


3,762,641
RAILROAD TRACK
Egon Schubert, Lainzerstrasse 25b/8, Vienna, Austria
Filed Dec. 15, 1971, Ser. No. 208,087
Claims priority, application Austria, Jan. 5, 1971, A 34
Int. Cl. E01b 2/00
U.S. Cl. 238—29 5 Claims



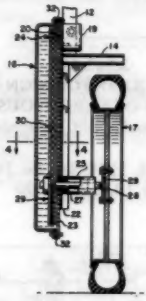
Each tie of a railroad track has flexurally stiff bracing elements extending in the direction of the track rails into both adjacent cribs. The bracing elements extend along the axis of symmetry extending longitudinally centered between the rails and/or under the rails. Preferably, two or more adjacent ties with the bracing elements are formed into a unit, for instance a cast reinforced concrete unit.

3,762,642
GRASS GUARD FOR SPRINKLER HEADS
Bartel J. Di Santo, 2286 Country Club Dr., Salt Lake City, Utah
Filed Apr. 17, 1972, Ser. No. 244,711
Int. Cl. A01g 25/06; B05b 15/06
U.S. Cl. 239—201 5 Claims



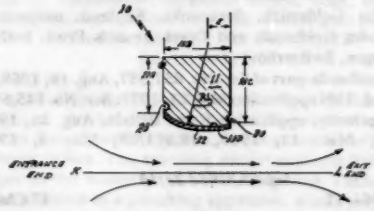
A lawn sprinkler has a sprinkler head secured to the upper end of a water-supply pipe which is disposed in the ground. The upper side of the sprinkler head is substantially flush with the upper surface of the ground, and a grass guard is disposed under the sprinkler head with the water supply pipe extending through an aperture in the grass guard. The grass guard comprises a plate-like member which includes two or more complementary sections, the complementary sections being engaged together under the sprinkler head by tongue and groove joints at their edges to form the guard plate-like member having the aperture therethrough, with the water supply pipe extending through the aperture. Disengagement and removal of a complementary section from the other section results in a passageway or clearance channel of width at least slightly larger than the outer diameter of the water supply pipe. Consequently the grass guard can be relatively easily and quickly removed, when broken, and replaced without requiring the prior removal and subsequent reinstallation of the sprinkler head.

3,762,643
IRRIGATING APPARATUS
Russell G. Allen, Jr., Amarillo, Tex., assignor to Hydro Corporation, Amarillo, Tex.
Continuation of Ser. No. 879,698, Nov. 25, 1969, abandoned.
This application Jan. 20, 1972, Ser. No. 219,539
Int. Cl. B05b 3/12
U.S. Cl. 239—212 30 Claims



In an irrigating apparatus comprising a water conduit supported above crop height on self-propelled, movable support towers, wherein at least one, preferably all, of the towers has motor and transmission means (e.g., a worm gear and chain and sprockets) to drive its movable base (e.g., a drive wheel), the present invention provides rigid enclosure means for the transmission means to hold a reservoir of lubricant in contact with the transmission means and to prevent leaves, sand, dirt, foliage from the crop, etc., from coming into contact with and fouling the transmission means.

3,762,644
STRESS RELIEF GROOVES FOR PYROLYTIC GRAPHITE COATED ROCKET NOZZLE INSERTS
Alan J. Mikeska, Annandale, Va., assignor to the United States of America as represented by the Secretary of the Air Force
Filed May 11, 1970, Ser. No. 48,763
Int. Cl. B63h 11/00
U.S. Cl. 239—265.11 8 Claims



A method of preventing delamination of the pyrolytic graphite coating of a rocket nozzle insert during fabrication and

operation. The method includes the steps of forming a circumferential stress relief groove on the entrance end face of the substrate material portion of the rocket nozzle insert near the pyrolytic graphite coating-substrate material interface, and of forming a similar circumferential stress relief groove on the exit end face of the same substrate portion near the pyrolytic graphite coating-substrate material interface, with each groove defining a separate circle the geometric center of each of which is on the central axis of the rocket nozzle insert, which axis is coincident with the longitudinal axis of the rocket nozzle of which the insert is to be a component part. The grooves give flexibility to the substrate material portion near the interface with the pyrolytic graphite coating, and thereby prevent high interlaminar sheer stresses from developing.

3,762,645

WALL BREACHING ATTACHMENT FOR FIRE HOSE

Lester J. Gendron, 106 N. Gateway Dr., Madera, Calif.

Filed Jan. 5, 1972, Ser. No. 215,478

Int. Cl. B05b 7/24

U.S. Cl. 239—271 **4 Claims**

A fire hose nozzle is sharpened to a bayonet-like point at its forward end, thereby enabling the operator to gouge a pit or open a crack in a wall to be breached. A high pressure stream of water issuing from the nozzle and striking the pit or crack is sometimes effective through pressure alone to enlarge the surface opening and ultimately breach the wall. By injecting a charge of abrasive material into the high pressure water stream, the area of weakness formed by the pit or crack quickly enlarges and soon causes the wall to rupture and give way since the erosion of the pit or crack is greatly accelerated by the abrasive material entrained in the high velocity water stream.

3,762,646

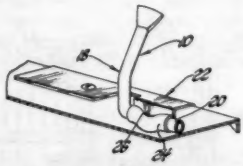
NOZZLE CLIPS

Ludwig Leichli, Emmaus, Pa., assignor to McCord Corporation, Detroit, Mich.

Filed Dec. 23, 1971, Ser. No. 211,228

Int. Cl. B05b 1/10

U.S. Cl. 239—284 **3 Claims**



This invention relates to nozzle clips used in windshield washing systems for supporting the fluid carrying conduit. The conduit has an irregularity around which is wrapped a portion of a support bracket to prevent linear and rotary motion of the conduit during fabrication and service.

3,762,647

SPRAYER

Tetsuya Tada, 2-6, 3-chome, Nishinokanobu, Shinagawa-ku, Tokyo, Japan

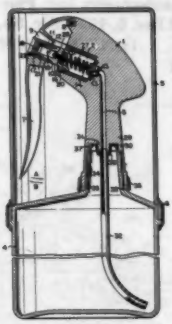
Filed Aug. 24, 1972, Ser. No. 283,358

Claims priority, application Japan, Aug. 26, 1971, 46/64722; Mar. 25, 1972, 47/35403

Int. Cl. B05b 9/04, 1/34, 11/00

U.S. Cl. 239—321 **10 Claims**

A sprayer comprising a sprayer body having a cylinder, a check valve for permitting only a flow of spray material into the cylinder, a piston reciprocatively inserted in the cylinder, said piston having a passage therethrough, a swirl member positioned in the passage, wherein upon backward movement



of the piston the swirl member opens the passage to atomize the material and upon forward movement of the piston the member closes the passage to introduce the material through the check valve into the cylinder.

3,762,648

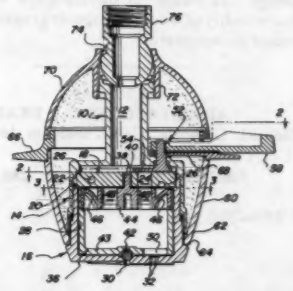
SPRAY NOZZLE

Siegmund Deines; John M. Trenary, both of Fort Collins; David W. Smith, Wellington, and Clarence J. Hickman, Fort Collins, all of Colo., assignors to Teledyne Industries Inc., Fort Collins, Colo.

Filed June 21, 1972, Ser. No. 264,959

Int. Cl. B05b 1/08

U.S. Cl. 239—383 **15 Claims**

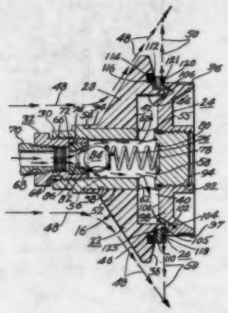


A spray nozzle especially useful as a showerhead operable to deliver an intermittently interrupted or pulsating spray. Water passing through the device is divided within the device into two flow paths which are recombined prior to discharge through groups of nozzle orifices. Water flowing through one of the flow paths is directed against a turbine blade assembly to drive a rotatable valve rotor in rotation at a rotary speed dependent upon the pressure of water following this flow path. The second flow path bypasses the turbine blades, and hence water following the second flow path does not contribute to the rotary speed of the valve rotor. By adjustably throttling flow through the second flow path, the pressure head or driving force of water in the first flow path against the turbine blades may be varied to thus vary the rotary speed of the valve rotor independently of the supply pressure. Flow of water to each group of nozzle orifices is cyclically interrupted by the rotating valve rotor which connects only a portion of the orifices to supply at a given time. The configuration of the rotating valve port and the arrangement of the groups of nozzle orifices is such that back pressure at the rotating valve port remains constant regardless of the rotary position of the valve port.

3,762,649
SPRAY APPARATUS FOR SPRAYING HERBICIDES, INSECTICIDES AND THE LIKE

Robert R. Dalhaus, Pine Hill, Ala., assignor to Max-Dal Aero Applicators Manufacturers, Inc., Pine Hill, Ala.

Filed Dec. 8, 1971, Ser. No. 206,095
Int. Cl. B05b 1/14
U.S. Cl. 239—391 13 Claims

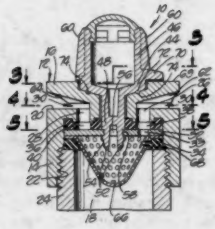


A spray apparatus for spraying herbicides, insecticides and the like from a vehicle in movement through air is provided having an air deflecting configuration for deflecting an air stream outwardly around the apparatus, and liquid passing through the apparatus is discharged in a manner to produce a plurality of uniform jets directed outwardly and transversely to the air stream. The spray apparatus includes a housing having means for producing a turbulent flow of liquid therethrough and means for directing the turbulent flow of liquid to a plurality of discharge openings spaced in an annular array around the apparatus.

3,762,650
ADJUSTABLE SPRAY HEAD

Tony Radecki, Glendale, Calif., assignor to Modern Faucet Mfg. Co., Los Angeles, Calif.

Filed Sept. 5, 1972, Ser. No. 286,560
Int. Cl. B05b 1/16
U.S. Cl. 239—396 14 Claims

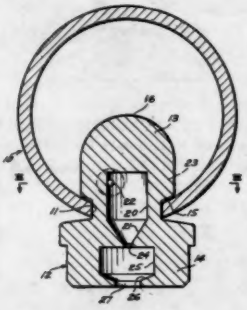


An adjustable spray head for use in spray irrigation which comprises a body member adapted to be secured to a pressurized water source and having a pair of outlet apertures therein, a disc carried within the body member and having a plurality of varying sized orifices therethrough, a selector for aligning the desired size orifice with one of the outlet apertures and a deflector positioned over each of the outlet apertures for causing the water flow through each of the apertures to be sprayed over a different area.

3,762,651
AGRONOMIC IRRIGATION DEVICE

Elie Condolios, Grenoble, France, assignor to Societe Grenobloise d'Etudes et d'Applications Hydrauliques (Sogreah), Grenoble, France

Filed Jan. 17, 1972, Ser. No. 218,436
Claims priority, application France, Jan. 20, 1971, 02563
Int. Cl. B05b 1/34
U.S. Cl. 239—468 8 Claims

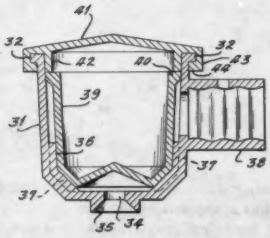


The pipes in an irrigation network are provided with a plurality of dripper watering devices, one for each plant and each having a first cylindrical chamber with a conical base and into the upper part of which the water is fed tangentially from the pipe to which the device is connected through a calibrated orifice. The water is discharged from such chamber through an axial, calibrated orifice at the bottom of the conical base thereof and into a second cylindrical chamber having at its bottom an irrigation water delivery orifice.

3,762,652
NOZZLE FOR DELIVERING A CONIC SPRAY PATTERN

James K. Huling, Belleville, Ill., assignor to Barry-Wehmiller Company, St. Louis, Mo.

Filed Aug. 21, 1972, Ser. No. 282,386
Int. Cl. B05b 1/34
U.S. Cl. 239—469 10 Claims



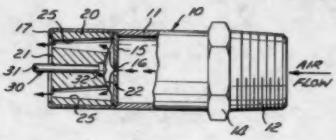
A molded spray nozzle consisting of snap-in components for removal to maintain sanitary conditions in pasteurizers, warmers and food processors. The components consist of an outer body having internal tangential lands and grooves for imparting a swirl to the fluid flow, and an inner body thimble spaced from the outer body to form an annular space to feed the fluid into the grooves and a dome-shaped bottom wall forming with the tangential lands a fluid swirl chamber. The outer body is formed with an outlet nozzle aligned with the swirl chamber and shaped to direct the spray discharge into a conic pattern having a diameter of appropriate size at the distance desired for optimum delivery of the fluid.

3,762,653

DEAD-ENDABLE SELF-PRESSURE REGULATING AIR NOZZLE

Stephen J. Gibel, 5846 Edgerton Rd., North Royalton, Ohio

Filed July 19, 1972, Ser. No. 273,329
Int. Cl. B05b 1/14
U.S. Cl. 239—541 9 Claims



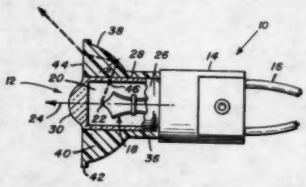
Air ejector having discharge pressure-limiting and noise-suppressing nozzle means is provided with valving means actuated by dead-ending said nozzle means against a surface to thereby reduce the downstream pressure of the air at the outlet of said nozzle means for all static conditions.

3,762,654

LIGHT BEAMING REFLECTOR LENS ASSEMBLY

Neil T. Haslett, 2801 Auraro Rd., Hudson, N.Y.; Charles R. Morrison, Wheeler Hill Rd., Frewsburg, N.Y., and Philip C. Roller, R.D. No. 2, Blockville-Watts Flatts Rd., Ashville, N.Y.

Filed Aug. 16, 1972, Ser. No. 281,021
Int. Cl. F21v 13/04
U.S. Cl. 240—41.3 9 Claims



Spotlighting and controlled beaming of illumination from an incandescent filament lamp is effected by use of a bulb having a lens tip envelope and a solid prismoidal body enclosing the bulb envelope. A curved, annular surface of the prismoidal body internally reflects all radiation emitted from the filament which emerges from a front lens surface except for the radiation that is directly transmitted through the lens tip of the envelope centrally projecting from the prismoidal body.

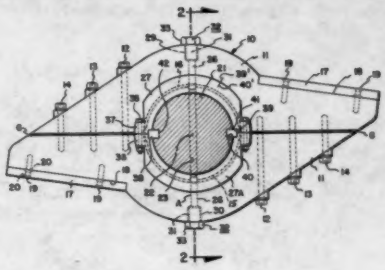
3,762,655

SHEARING MECHANISM

John C. Brewer, Salt Lake City, Utah, assignor to Garbalizer Corporation of America, Salt Lake City, Utah

Filed Jan. 3, 1972, Ser. No. 214,985
Int. Cl. B02c 23/04
U.S. Cl. 241—32 9 Claims

Improved, shaft driven, shearing structure having shear pin means so positioned as to minimize down-time servicing, and expense of maintenance in the event of shear overload. Specifically, a shaft is provided with a hub mounting a blade structure thereto. The blade structure, hub and shaft are provided with mutually aligned apertures to constitute a through bore dimensioned to receive a shear pin structure at at least one and preferably both extremities. In the event of shear pin breakage, the affected shear pin or pins may be removed and subsequent ones installed, with such subsequent ones thrusting pieces of former pin centrally such that the through bore at the shaft area will store these pieces. After usage of subsequently emplaced shear pins in multiple numbers, then the broken shear pin pieces may be removed simply by a punch out or press out operation. Adjustment structure is likewise provided for appropriate bearing wear monitoring and replacement.

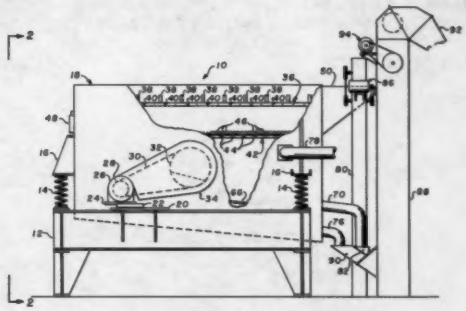


3,762,656

SHAKEOUT AND CRUSHING APPARATUS

Vagn Deve, Pittsburgh, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 9, 1971, Ser. No. 197,062
Int. Cl. B02c 17/14
U.S. Cl. 241—60 13 Claims



A shakeout and crushing apparatus for reducing foundry sand to a condition for classification and reuse. The device comprises a shakeout chamber which is caused to orbitally vibrate. The chamber has an upper shakeout deck, a second disintegration deck supporting a plurality of metal balls, and a third wire screen deck. The sand is successively passed and progressively classified through the three decks. Material remaining on the wire screen deck is recycled to a disintegration chamber on the second deck which assures crushing of friable material and the removal of any tramp metal which may be present in the sand.

3,762,657

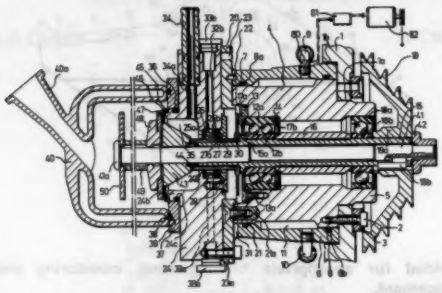
CONTINUOUSLY OPERATING AGITATOR BALL MILLS

Martin K. Schieritz, Basel, Switzerland, assignor to Willy A. Bachofen, Basel, Switzerland

Filed May 18, 1972, Ser. No. 254,644
Claims priority, application Switzerland, Mar. 1, 1972, 2944/72
Int. Cl. B02c 7/14, 11/08
U.S. Cl. 241—66 15 Claims

An agitator ball mill including an annular stator assembly and a co-axially mounted rotor is disclosed. A first annular member is mounted on the stator and a second annular member is mounted on the rotor shaft. The position of the second annular member along the shaft is determined by a demountable spacer member to provide coarse adjustment of

the width of a gap defined between mutually facing axial surfaces of the first and second annular members. Coolant is applied to the stator to cause controllable axial contraction of the stator relative to the shaft. This relative contraction increases the width of the gap and thus provides a fine adjustment of the width, so as to prevent grinding bodies from passing through it, whilst permitting material ground in the mill by the bodies to pass through the gap and thereby become separated from the grinding bodies.



3,762,658

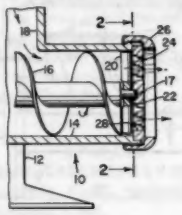
MEAT CUTTING AND EXTRUDING DEVICE

James H. Barnes, 283 Tolbert St., Wadsworth, Ohio

Filed Dec. 10, 1971, Ser. No. 206,644

Int. Cl. B02c *18/36*

U.S. Cl. 241—82.5 3 Claims



A meat cutting or grinding device including a frame in which an extruder is provided for moving meat along the axis of the extruder and a cutter means is present for cutting it into sections. The device includes a discharge plate or member perpendicular to the axis of the extruder and which discharge member has a plurality of axially extending apertures therein of reduced size adjacent their discharge ends. Or, these discharge apertures can be in the form of slots to provide relatively large pieces or flakes of meat as forced through the discharge by the extruder member.

3,762,659

GRINDER

Poul Erik Aegidius, Hillerod, Denmark, assignors to N. K. Verwaltungs AG, Zug, Switzerland

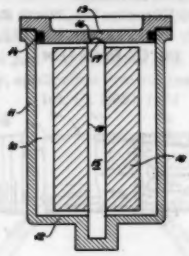
Filed Mar. 9, 1972, Ser. No. 233,097

Claims priority, application Denmark, Mar. 9, 1971, 1083/71

Int. Cl. B02c *19/08, 1/00*

U.S. Cl. 241—199 2 Claims

This invention provides for a grinder of the type having a closed chamber in which an impact means is slidably mounted for substantially reciprocating movement of a predetermined stroke length, characterized in that the impact means is a smooth cylindrical body with plane parallel end faces and with a throughgoing axial bore fitting loosely on a shaft mounted fixedly in one end wall and disposed on the longitudinal axis of the chamber, and that the chamber is formed as a cylindrical hollow space of a diameter that is substantially larger than the impact body and is closed at the other end by a detachable cover provided with a guide for the corresponding end of the shaft.



3,762,660

REFINER STAND

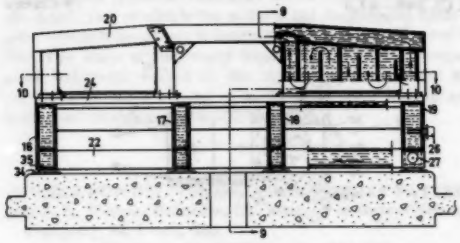
Jan Ingemar Verner Bergstrom, Sundsvall, Sweden, assignor to SCA Projekt Aktiebolag, Sundsvall, Sweden

Filed Oct. 18, 1971, Ser. No. 190,201

Claims priority, application Sweden, Nov. 4, 1970, 14867/70

Int. Cl. B02c *23/00*

U.S. Cl. 241—285 R 6 Claims



The invention concerns the provision of an improved stand, for a double-disk refiner, in which the temperature throughout can be maintained constant and obliqueness of the disks in relation to each other can be avoided. Bearing devices for shafts of the grinding disks are supported on trestles connected together by a plurality of beams which are arranged partly above and partly below a horizontal plane through the disks. The stand includes (*a*) ducts for circulation of a heat-transfer fluid through the stand and (*b*) means for keeping the fluid at constant temperature.

3,762,661

AUTOMATIC SKEIN WINDING MACHINE

Ernst Lucke, Stuttgart, Germany, assignor to Croon & Lucke, Maschinenfabrik Gesellschaft mit beschrankter Haftung, Stuttgart, Germany

Filed June 14, 1972, Ser. No. 262,726

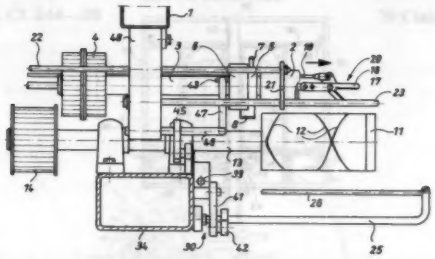
Claims priority, application Germany, June 18, 1971, P 21 30 225.0

Int. Cl. B65h *54/02, 54/56*

U.S. Cl. 242—18 R 12 Claims

The yarn wound by a yarn laying drum on a windup shaft, is clamped to the windup shaft at the beginning of a skein by a pair of clamping members. When the skein is wound, the clamping members open, and a combined cutting and clamping device moves between the open clamping members to a position first clamping, and then cutting, the yarn portion between the yarn laying drum and the finished skein. The cutting and clamping device is retracted with a cut and

clamped yarn end, and the yarn is clamped between the pair of clamping members and then released by the cutting and clamping device so that a new skein can be wound when the old skein has been stripped from the windup shaft. A position-



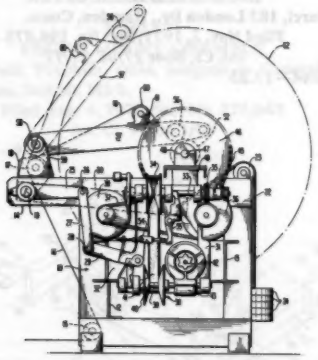
ing rod moves the yarn portion between the skein and the laying drum in the path of the cutting and clamping means.

3,762,662

OFF-LOOM CLOTH TAKE-UP OR WINDER

Carlos L. Owens, and Arch E. Cutting, both of Greenville, S.C., assignors to Southern Machinery Company, Greer, S.C.

Filed Feb. 19, 1971, Ser. No. 116,939
Int. Cl. B65h *17/02, 25/22*
U.S. Cl. 242—67.1 5 Claims



A self-contained cloth take-up or winder separate from the weaving loom features a variable speed drive and a control means for the drive which senses tension in the cloth and causes the drive to maintain a constant tension in the cloth at all times. The mechanism can also be used to wind other sheet material, such as plastic, coming from an extruder.

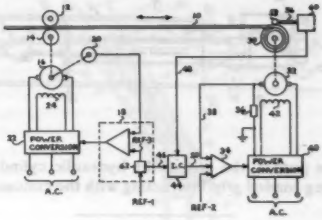
3,762,663

STATIC MEANS FOR GENERATING INERTIA COMPENSATION SIGNALS IN REEL DRIVES

Robert Joseph Nedreski, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Nov. 30, 1971, Ser. No. 203,285
Int. Cl. B65h *25/28*
U.S. Cl. 242—75.51 4 Claims

Static circuit means is provided for generating an inertia compensation signal in response to a first input signal proportional to the diameter of strip material on a reel and a second signal proportional to the linear acceleration, or deceleration, of the strip material. The inertia compensation signal is utilized in the control for the reel drive motor to maintain strip



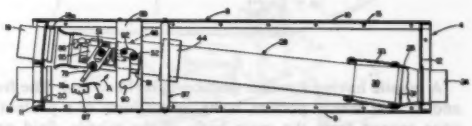
tension substantially independent of changes in line velocity of the strip.

3,762,664

PNEUMATIC TUBE SYSTEM SWING TUBE DIVERTER CONSTRUCTION

Donald E. Loveless, Liverpool, N.Y., assignor to Diebold, Incorporated, Canton, Ohio

Filed Feb. 10, 1972, Ser. No. 225,078
Int. Cl. B65g *51/24*
U.S. Cl. 243—31 5 Claims



A swing tube diverter construction for multiple station pneumatic tube systems. A pneumatic tube section is mounted at one end to swing between two positions extending from a tube system main line. A pair of rollers is mounted on the swinging tube section adjacent the swinging end thereof. A rotatable drive yoke connected to a reversible motor has a slot engaged with one of the rollers. The other roller is engaged in a fixed generally U-shaped cam track. The cam roller follows the path of the cam track in cooperation with movement imparted to the swinging tube section by the other roller engaging the yoke. This selectively connects the swinging tube section to one or the other of two branch tube system legs. Thus a carrier may travel in either direction between the main line and a selected branch leg.

3,762,665

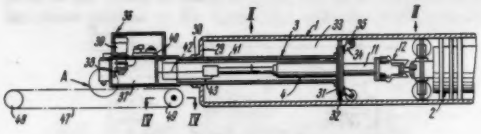
CONTAINER BRAKING DEVICE

Adolf Moritsovich Alexandrov, Federativny prospekt, 6, korpus 3, kv. 8, Moscow; Ippolit Davidovich Suladze, prospekt Chavchavadze, 11, kv. 41, Tbilisi; Ilia Solomonovich Kantor, Malo-Moskovskaya ulitsa, 31, kv. 45; Vladimir Efimovich Aglitsky, Zatsepsky val, 6/13, kv. 61, both of Moscow; Avtandil Semenovich Kakhniashvili, ulitsa Eliava, 37, kv. 41, Tbilisi; Jury Abramovich Tsimbler, Sojuzny prospekt, 10, kv. 261, Moscow; Alexandr Alexandrovich Lachinov, Zhivopisnaya ulitsa, 12, kv. 19, Moscow; Jury Arnoldovich Topolyansky, Matveevskaya ulitsa, 10, korpus 4, kv. 233, Moscow; Gennady Nikitich Ivanov, Bolshoi Savvinsky pereulok, 17, kv. 2, Moscow, and Mark Abramovich Feldman, Yasny proezd, 14, kv. 100, Moscow, all of U.S.S.R.

Filed Apr. 22, 1971, Ser. No. 136,526
Int. Cl. B65g *51/04*
U.S. Cl. 243—38 7 Claims

A device for braking containers propelled through a tube by the pressure of gas, installed in the reception-starting chamber

and comprising a double-acting hydraulic cylinder located on



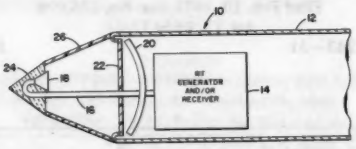
a movable pusher; the end of the hydraulic cylinder rod carries a spring-loaded grip interacting with the container.

3,762,666

HYPERVELOCITY MISSILE DESIGN TO ACCOMODATE SEEKERS

Guy P. Thompson, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

Filed June 8, 1971, Ser. No. 151,083
Int. Cl. F42b *15/02*
U.S. Cl. 244—3.19 1 Claim



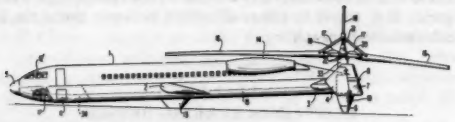
A missile having a seeker portion in its head end. The front end of said seeker portion being in the form of a protective cone spaced from the main body of the missile. Said cone being coated with either ceramic or ablative material whereby air and foreign particles therein will be diverted outwardly away from the missile to prevent excessive heating of the seeker dome or erosion thereof.

3,762,667

VERTICAL TAKE-OFF AND LANDING AIRCRAFT

David R. Pender, 1018 Marion St., Columbia, S.C.

Filed Dec. 29, 1971, Ser. No. 213,245
Int. Cl. B64c *27/22*
U.S. Cl. 244—7 A 31 Claims



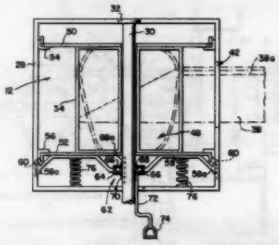
A VTOL aircraft is powered on regular fixed wing flight by a pair of jet engines on the after quarter of the fuselage and achieves vertical take-off and landing under the power of an articulated tail rotor which is retractable into a storage compartment of the fuselage during conversion from rotor flight to fixed wing flight. The take-off and landing rotor derives power for its blade tip jet nozzles through internal ducting which receives jet engine exhaust gas through a diversion system connected in the main jet exhaust nozzle of each engine. Bypass air is also diverted from each engine to the interior of the rotor blades and is further directed to rotor blade jet flap slots for maintaining rotor cyclic and collective pitch control without the customary complex mechanisms. Rotor directional control is maintained by diverting additional bypass air to certain fixed wing jet flap slots. A mechanical traction device is utilized to retract and extend the rotor.

3,762,668

SINGLE PASSENGER FLEXIBLE ROTOR AIRCRAFT

Lewis Feldman, 88 Nanau Rd., Massapequa, N.Y.

Filed Aug. 23, 1971, Ser. No. 174,035
Int. Cl. B64c *27/48*
U.S. Cl. 244—17.11 12 Claims



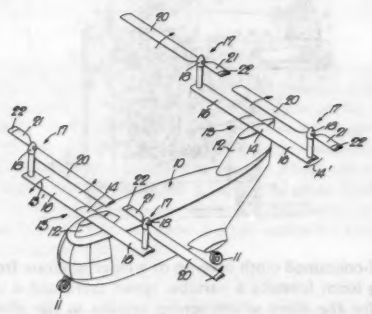
A personal aircraft vehicle includes a compartment having a platform on which the single operator stands and a drive system which includes jet engines located at the tips of flexible, extensible rotor blades secured to a rotatable drum. The blades extend through slots in an outer shroud which is selectively clutched to the drum to control deployment of the blades. The drum serves as a fuel tank and fuel is supplied to the engines through tubing in the blades. The craft is controlled during flight by the drive engines and the operator through the shifting of his weight within the compartment.

3,762,669

HIGH-SPEED HELICOPTER

Alfred Curci, 183 London Dr., Hamden, Conn.

Filed Nov. 2, 1971, Ser. No. 194,875
Int. Cl. B64c *27/08*, *27/12*
U.S. Cl. 244—17.23 17 Claims



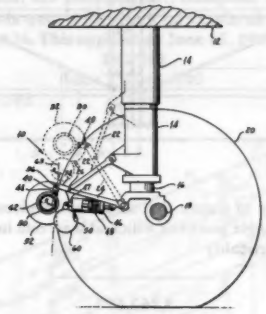
A helicopter craft has a fuselage with a longitudinal axis, and a rotary wing lift system providing at least two arms above and carried by the fuselage, with each arm radiating from and turnable about an upright axis intersecting the longitudinal axis of the fuselage. A variable-pitch lift blade is carried by each arm, with each blade radiating from and being turnable about an axis on the respective arm which is substantially parallel to and radially spaced from the rotary axis of the latter. The arms and blades are phased with each other, and they are power-driven at a one-to-one speed ratio in respective directions, to the end of achieving combined rotary sweep of each arm and associated blade through larger and smaller areas on opposite sides, respectively, of the longitudinal fuselage axis on which the sweep velocity is subtractive from, and additive to, forward flight velocity of the craft, respectively.

3,762,670

LANDING GEAR WHEEL DRIVE SYSTEM FOR AIRCRAFT

Charles W. Chillson, Wayne, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Dec. 16, 1971, Ser. No. 208,693
Int. Cl. B60k 7/00
U.S. Cl. 244—50 29 Claims



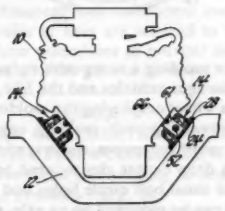
The invention comprises a light weight auxiliary drive mechanism carried by an aircraft for applying driving torque to wheels of a landing gear of the aircraft for taxiing the aircraft along the ground. In particular, the mechanism consists of a driving drum arranged for friction driving engagement with the tire of a wheel of a landing gear having a telescopic, shock-absorbing strut, and an auxiliary motor drivably connected to the drum, with the drum being supported on said landing gear.

3,762,671

ENGINE MOUNT ASSEMBLY

John C. Schulz, Franklin, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 4, 1972, Ser. No. 278,043
Int. Cl. F16m 5/00
U.S. Cl. 248—9 2 Claims



An engine mount assembly for resiliently supporting an engine on a frame of a motor vehicle comprising two pairs of resilient pads which are molded at their outer surfaces to the interior of a sleeve and at their inner surfaces define an opening extending longitudinally of the sleeve. A wedge assembly is mounted in the opening interior of the resilient pads and is expandable to simultaneously compress one pair of the resilient pads to increase the spring rate of these pads without changing the spring rate of the other pair of resilient pads.

3,762,672

POST FOR RURAL TYPE MAIL BOXES

George F. Tabbert, Cassopolis, Mich., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Apr. 11, 1972, Ser. No. 243,040
Int. Cl. E04h 12/00
U.S. Cl. 248—146 1 Claim

A horizontal plate is provided with downwardly extending legs having pointed lower ends. Another parallel plate is vertically spaced above and horizontally offset from the first plate. A mail box can be secured to the second plate. A hollow frame

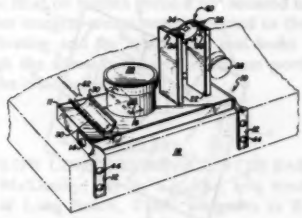
including lattices is disposed between the two plates and is secured thereto to form an integral structure.

3,762,673

MEDICANT WITHDRAWAL UNIT

Helen S. Koslovsky, 4333 Henry Ave., Hammond, Ind.

Filed Nov. 23, 1971, Ser. No. 201,419
Int. Cl. A47b 73/00
U.S. Cl. 248—154 7 Claims



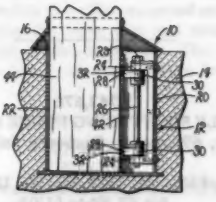
An insulin withdrawal unit for enabling insulin to be withdrawn from a bottle and injected with one hand. The unit includes a base having a pair of upstanding posts to which the bottle is removably mounted. Also mounted to the base is a container for alcohol sponges, a cradle for supporting a hypodermic syringe, and a pair of arms adapted to bear against the side of a table to restrain the unit against movement on the table.

3,762,674

RELEASABLE SIGNPOST RECEPTACLE

Henry S. Ortega, 1830 E. Jensen Ave., Fresno, Calif.

Filed Nov. 8, 1971, Ser. No. 196,523
Int. Cl. E02d 27/42
U.S. Cl. 248—158 4 Claims



This disclosure concerns a signpost base receptacle for releasably mounting a signpost in a concrete pad. The receptacle is substantially larger than the base of the signpost and is recessed in a concrete pad with its top substantially flush with

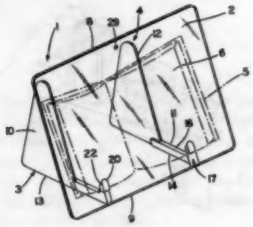
ground level. A rotatable shaft is disposed vertically in the receptacle adjacent one wall and a pair of cams are eccentrically mounted on the shaft intermediate its ends. Upon rotation of the shaft the cams are disposed to engage a movable clamping plate removably disposed in the receptacle. The base of the signpost is placed in the receptacle between one wall and the clamping plate and secured by rotating the shaft to cause the eccentric cams to engage the clamping plate and drive it against the signpost base, clamping the base between the plate and an opposite wall. A releasable rachet is provided on the shaft to hold the cams against the clamping plate until release of the signpost base is desired. The receptacle is rectangular but can be adapted to accept other than rectangular signpost bases by merely providing shape adapter plates around the base.

3,762,675

COOKBOOK STAND CONSTRUCTION

Richard W. Sankey, 1128 Lindy Lane Ave., S.W., North Canton, Ohio

Filed Apr. 12, 1972, Ser. No. 243,157
Int. Cl. A47b *97/08*
U.S. Cl. 248—464 **7 Claims**



A stand for holding an opened cookbook in upright readable position behind a transparent front panel which protects the book from cooking splatters. The front panel is supported in an inclined position by a pair of spaced hingedly mounted brackets. The brackets have upwardly extending wing members which are spaced rearwardly from the front panel by leg members. The leg members extend horizontally from the wing members and are connected to the front panel by hinges for movement of the brackets between open and folded positions. The leg and wing members support the bottom edge and back, respectively, of an opened book which may be inserted between the front panel and wing members when the brackets are in open position, to maintain the book in a slanted upright position for easy reading through the transparent front panel.

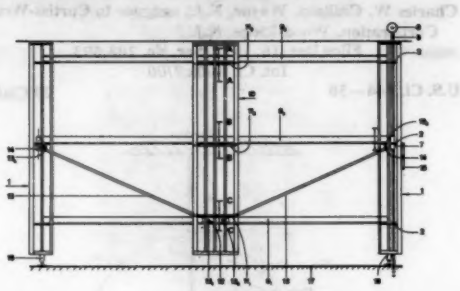
3,762,676

DISMANTABLE SHUTTERING IN THE FORM OF A BOX

Achac Williger, 69, rue du Faubourg Saint Antoine, Paris, France

Filed Mar. 19, 1971, Ser. No. 126,143
Int. Cl. E04g *11/02*
U.S. Cl. 249—53 **3 Claims**

Dismantable shuttering in the form of a box for casting concrete comprising upright angle pieces joined to one another by three parallel cross pieces to which are fixed lattices clad with finishing plates, one of the lattices on each side of the box having reference sections, at the level of each cross piece, which are brought into contact with each of the cross



pieces in order to ensure that all the cross pieces are at right angles to the angle pieces of which at least one includes a level to check its verticality.

3,762,677

MOLDING APPARATUS

Leslie R. Adams, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Continuation-in-part of Ser. No. 857,960, Sept. 15, 1969, abandoned. This application Oct. 14, 1971, Ser. No. 189,116
Int. Cl. B22c *9/28*
U.S. Cl. 249—56 **22 Claims**

Apparatus for molding a composite styled wheel for use on automotive passenger vehicles and the like, a method of constructing such a wheel employing the molding apparatus and a method of constructing such molding apparatus, wherein a portion of the mold comprises a conventional metal vehicle wheel having a drop center rim secured to a central disc or body having the usual bolt circle holes and a central aperture so that the disc can be mounted on an axle, drum or disc brake assembly. The metal wheel is employed in conjunction with an upper back-up clamp and lower mold part to define therewith a sealed cavity for molding and attaching a three-dimensional contoured plastic overlay, the overlay thus being molded in situ and permanently attached to the outboard side of the wheel in the mold apparatus. Preferably, the wheel forms the upper surface of the mold cavity and a reaction mixture of a urethane elastomer liquid adhesive material is injected or poured into the mold to fill the cavity and contact the outboard surface of the wheel assembly. The urethane material solidifies to form a high density noncellular elastomer body which permanently adheres to the outboard surface of the wheel subassembly. The plastic overlay may also be constructed from a lower density microcellular closed cell urethane elastomer adhesive material. The urethane material is allowed to solidify in the mold cavity and then the mold is opened so that the wheel with the overlay securely adhered to it may be removed from the mold. The overlay may then be painted or otherwise covered with a decorative coating to provide a finished metallic-appearing ornamental wheel. The

urethane elastomer thus forms a plastic body having a three-dimensional contour which is permanently attached to the outboard side of the wheel to provide a decorative surface, and the elastomer overlay appears to be an integral portion of the metal wheel.

3,762,678

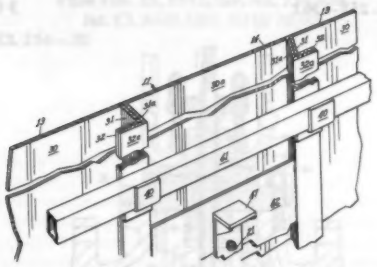
REUSABLE FORMS FOR CASTING WALLS

James Thornton, 413 Shoreline Dr., Hampton, Va.

Continuation-in-part of Ser. No. 17,053, March 6, 1970, Pat. No. 3,672,626. This application June 15, 1972, Ser. No. 262,960

Int. Cl. E04g 9/00

U.S. Cl. 249—193 6 Claims



A reusable form assembly for casting walls and footings from concrete or other suitable material consisting of corner-forming members, side-forming panel members and main support members disposed between successive panel members, all detachably bolted together to provide a selected form length for forming one surface of the wall or footing. If a form is to be used in forming the other surface of the wall, a similar arrangement of corner-forming members, panel members, and main support members is provided in suitable length and in laterally spaced relationship to the first mentioned form assembly. A dovetail joint arrangement is provided between the corners and the cooperating side panels and between the panels and cooperating support members to effectively align the cooperating members and hold them in true alignment until the form is disassembled. Additional longitudinally extending support wales or bars are secured to the exterior of each of the wall-form assemblies to prevent outward bulging thereof from the force of the poured concrete.

3,762,679

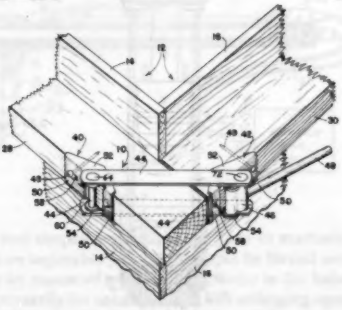
SELF-CONTAINED, ARTICULATED, OUTSIDE CORNER-FORMING DEVICE FOR A CONCRETE WALL FORM

James A. Black, Deerfield, Ill., assignor to Superior Concrete Accessories, Inc., Franklin Park, Ill.

Filed May 17, 1972, Ser. No. 254,194

Int. Cl. E04g 11/08

U.S. Cl. 249—194 4 Claims



A self-contained, articulated, outside right angle corner-forming device by means of which the adjacent end regions of two, waler-like panel-reinforcing boards are held in their right angular relationship and are forced hard against the concrete wall form panels which they reinforce.

3,762,680

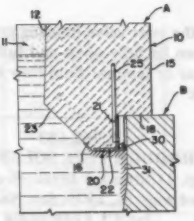
HOT TOP FOR INGOT MOLDS

John B. Whitacre, Jr., and Robert E. Hoobler, both of Waynesburg, Ohio, assignors to Whitacre-Greer Fireproofing Company, Waynesburg, Ohio

Continuation of Ser. No. 807,858, March 17, 1969, abandoned. This application July 6, 1971, Ser. No. 160,127

Int. Cl. B22d 7/10

U.S. Cl. 249—197 9 Claims



A hot top for use in connection with the pouring and forming of metal ingots in molds. The hot top is of the type which would tend to float on molten metal if not secured to the mold and it includes integral means not connected to the mold for preventing floating and for restraining seal leaks of molten metal through the space between the bottom portion of the hot top and the interior mold wall.

3,762,681

FLUID FLOW CONTROL DEVICE WITH BAFFLES

Richard W. McKinney; Jay R. Katchka, and Fred W. Hendrick, all of Long Beach, Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Sept. 28, 1971, Ser. No. 184,388

Int. Cl. F16k 7/17

U.S. Cl. 251—61.1 1 Claim

A fluid flow control device of the flexible diaphragm valve type includes a plurality of baffles mounted on the surface of the diaphragm facing the valve seat and extending radially from the centerpoint of the diaphragm. The disclosed fluid flow control device has a reduced pressure drop and greater capacity.

3,762,682

VALVE

Donald L. Franck, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

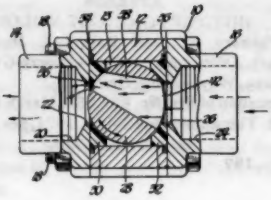
Filed Nov. 18, 1971, Ser. No. 199,927

Int. Cl. F16k 5/10, 5/06

U.S. Cl. 251—124 3 Claims

A precision fluid control ball valve including a ball having an opening therethrough with a circular opening at its outlet

end cooperating with a circular outlet valve housing port to provide for a variable outlet opening between valve open and valve closed positions and with the ball opening being progressively larger from its outlet to its inlet end so that the inlet end



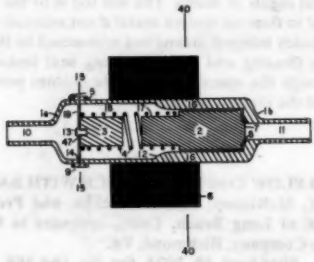
is fully open to the inlet valve housing port for all positions of the valve between its fully open and fully closed positions to provide for linear or laminar fluid flow through the valve for all said positions.

3,762,683

FLOW-THROUGH TYPE SOLENOID VALVES

Donald W. Sangl, 11 Blue Jay Drive, Brentwood, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,234
Int. Cl. F16k *31/06*
U.S. Cl. 251—139 1 Claim



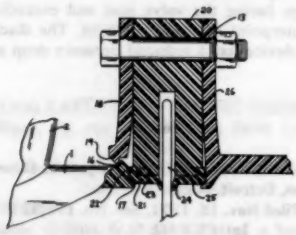
An electrically operated flow-through solenoid valve designed for remote and/or control applications that has a reduced current "hold open" position. The three possible operating states of my valve are: (1) closed to inhibit flow, (2) transient to open and open to allow flow, with maximum energizing current, (3) open to allow flow, with energizing current reduced from maximum.

3,762,684

ROTATABLE PIPE COUPLING

William H. Stein, Sun Valley, Calif., assignor to Anonda Plastics, Inc., Pacoima, Calif.

Filed Apr. 26, 1971, Ser. No. 137,470
Int. Cl. F16l *27/00*; F16k *51/00*
U.S. Cl. 251—148 21 Claims



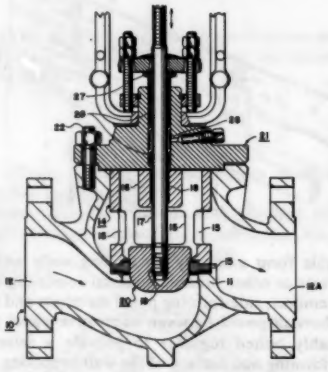
A plastic "tee" coupling for toilet and sink systems of mobile homes and the like. The coupling has a main tube with an integral flange and side tube. The coupling also has plastic platic collar that snaps on over the flange and is permanently retained between the flange and side tube. The plastic collar has sufficient "give" to springedly hold a rubber sealing gasket between a connecting pipe member and a sliding seal surface of the main tube. The sliding seal surface and the gasket form a sliding liquid tight seal that can be rotated 360° to angularly align and connect the side tube with another pipe.

3,762,685

STEM GUIDED VALVE WITH CAGE ASSEMBLY

John R. Curran, Attleboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 421,426, June 1, 1970. This application Dec. 9, 1971, Ser. No. 206,251
Int. Cl. F16k *51/00*
U.S. Cl. 251—362 3 Claims



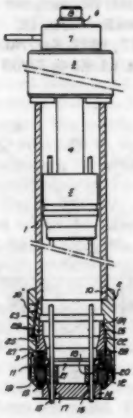
An industrial process contoured plug valve structure wherein guidance for the stem of the valve plug is provided by a central bearing surface contained within a valve cage provided for ease of assembly and replacement of the seat ring.

3,762,686

PRETENSIONING JACKS FOR PRETENSIONING REINFORCING WIRES

Juan Bautista Ripoll Gomez, Calle Consejo de Ciente, 304, Barcelona, Spain

Continuation of Ser. No. 115,434, Feb. 16, 1971, abandoned. This application Sept. 25, 1972, Ser. No. 291,796
Claims priority, application Spain, Feb. 21, 1970, 2121/70
Int. Cl. E21b *19/00*
U.S. Cl. 254—29 A 13 Claims



A pretensioning jack has an elongate hollow body, at one end of which is provided bearing means for bearing against an

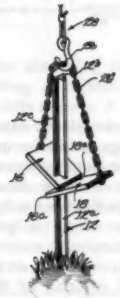
anchoring plate for a reinforcing wire. Within the body is a device for gripping the projecting end of at least one reinforcing wire projecting from the anchoring plate. At the other end of the body is a traction device for drawing the gripping device away from the anchoring plate to tension the reinforcing wire or wires. Striker means are provided to force home into their seatings the wedges to anchor the wire or wires in the plate after tensioning. The gripping device includes actuating means for releasing the wire or wires after they have been tensioned.

3,762,687

POST PULLING APPARATUS

Eugene J. De Rome, Morton Grove, and Carl J. Hengst, Niles, both of Ill.

Filed Feb. 28, 1972, Ser. No. 229,650
Int. Cl. B66f *3/06*; E21b *10/02*
U.S. Cl. 254—30 **3 Claims**



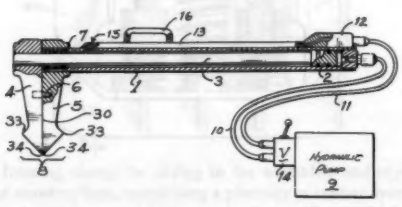
A fence post pulling apparatus is constructed of a pair of members, each member having an aperture for receiving a post therethrough with the end portions of the members extending outwardly in opposite directions, and flexible means such as a chain interconnecting the opposite end portions of the members, whereby an upward force on the chain will cause the members to grip the post and pull it axially upwardly, and the transverse forces will be substantially opposed and balanced.

3,762,688

HYDRAULICALLY EXPANDED HAND TOOL FOR RESCUE PURPOSES

William O. Leonhardt, Antigua, Guatemala, assignor to Dale E. Crook, Orange, Calif.

Filed Oct. 28, 1971, Ser. No. 193,321
Int. Cl. B66f *3/24*; B23p *19/04*
U.S. Cl. 254—93 R **4 Claims**



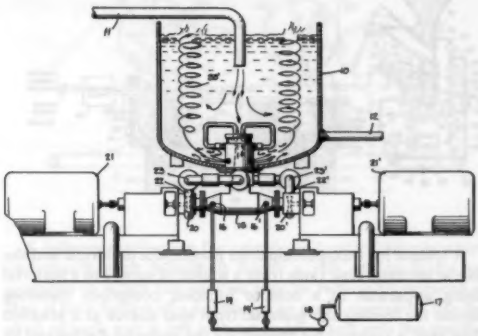
A hand tool shaped generally like an axe or mattock, whose head is in two separable pieces which can be forced away from each other by means of a hydraulic cylinder in the handle. It is intended primarily for use in making and enlarging openings in wrecked vehicles and in forcing portions of them apart, as for rescuing persons trapped inside. The tool can make its own holes. It is swung like an axe, and its sharp point chops a hole in, e.g., a vehicle door or roof. Then the hydraulic pressure is admitted to the cylinder in the handle. The two halves of the head are forced apart, enlarging the hole. The hydraulic cylinder is double-acting, so that the tool may also be used as a portable hydraulic press for forcing portions of the wrecked vehicle toward each other, where this is required.

3,762,689

HIGH ENERGY MIXING DEVICE

Douglas W. Hege, Woodland Hills, Calif., assignor to Hege Advanced Systems Corporation, Woodland Hills, Calif.

Filed Jan. 5, 1972, Ser. No. 215,460
Int. Cl. B01f *5/02*, *5/10*, *13/10*
U.S. Cl. 259—95 **13 Claims**



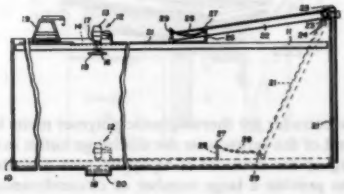
This disclosure is directed to a pumping and mixing device through which fluids are circulated. The device comprises a tank with a mixing head which contains high energy mass exchange impinging nozzles and a jet pump through which fluids from the mixing head pass under the driving force of at least one centrifugal pump. With the centrifugal pump inlet pressure increased by the use of the jet pump, large quantities of gases (or less dense fluids) may be injected at a point between the jet pump and the centrifugal pump inlet while still having the centrifugal pump produce a high discharge head (i.e., no cavitation). The fluid from the centrifugal pump outlet may be divided into two streams. One stream is passed through nozzle devices into the tank and the other is passed back through the jet pump. The device and its method of operation may be illustrated by the process of clarifying aqueous solutions of sugar and dissolving sugar crystals in water.

3,762,690

MIXING SYSTEM FOR FLOATING ROOF TANKS

H. Richard Harrington, Doylestown, Pa., assignor to Mixing Equipment Co., Rochester, N.Y.

Filed Jan. 31, 1972, Ser. No. 221,966
Int. Cl. B01f *7/22*
U.S. Cl. 259—108 **10 Claims**



Floating roof, liquid storage tanks such as for storage of petroleum products have a mixer motor in the center of the

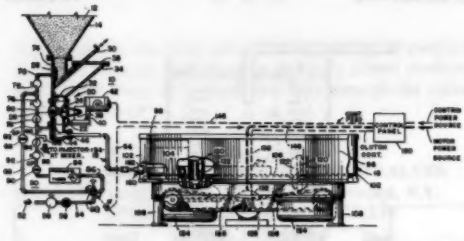
roof with a shaft extending through the roof, and a vertically pumping impeller arranged below the roof in the liquid to mix the liquid in the tank. This replaces and has many advantages over side entry mixers for similar tanks.

3,762,691

NONPLUGGING MATERIAL FEED SYSTEM

Elbert C. Troy, Highland Park, Ill., assignor to National Engineering Company, Chicago, Ill.

Filed June 30, 1972, Ser. No. 268,152
Int. Cl. B28c 5/06
U.S. Cl. 259—151 14 Claims



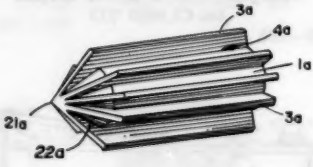
A system for transporting solid particulate materials and the like at metered flow rates from a source of supply to a material using apparatus at a remote location comprises metering means for feeding the material from said source at a selected flow rate, a receiver for containing the material discharged by said metering means including an outlet, elongated transport conduit means interconnecting said outlet and said using apparatus for containing a fluidized material flow, air injector means for moving the material from the receiver into and through said conduit means to said using apparatus, control means responsive to the operative condition of said using apparatus for maintaining said air injector means in operation for a selected time period after said apparatus is rendered inoperative for purging said receiver and conduit means of remaining material therein.

3,762,692

SCREW EXTRUDER FOR THERMOPLASTIC MELTS WITH TEMPERATURE EQUALIZING HEAD

Heinz Schippers, Remscheid, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppert, Germany

Filed June 22, 1971, Ser. No. 155,521
Claims priority, application Germany, June 23, 1970, P 20 30 755.5
Int. Cl. B29b 1/06, 3/00; B01f 7/04
U.S. Cl. 259—191 6 Claims



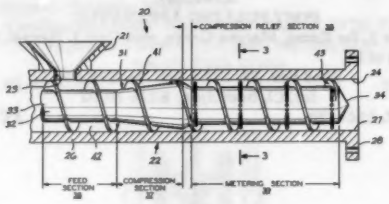
A screw extruder for thermoplastic polymer melts in which the free end of the screw near the discharge outlet in the barrel housing of the extruder is equipped with a slotted head member to provide a large number of circumferentially distributed ribs with a radial extension or corresponding depth of the slots which is sufficient to achieve a substantial improvement in the temperature equalization of the extruded polymer melt.

3,762,693

METHODS OF AND APPARATUS FOR ADVANCING AND WORKING THERMOPLASTIC MATERIALS

Robert Victor DeBoo, Chicago, Ill., and Charles Bean Heard, Jr., Lawrenceville, Ga., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Apr. 13, 1971, Ser. No. 133,575
Int. Cl. B29b 1/04, 1/06
U.S. Cl. 259—191 41 Claims



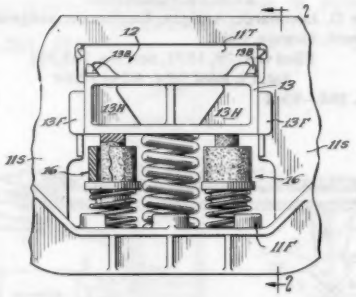
An extruder for thermoplastic material has a screw of a compression relief design for advancing and working the thermoplastic material to produce an extrudate at a more uniform temperature and with a more thorough mixing of thermoplastic materials than has been achieved in the past. A metering section of the screw is provided with pins for homogenizing the thermoplastic material with all of the pins in any one portion of the screw being arranged in a plane perpendicular to the axis of rotation of the extruder screw and directed radially outward from the axis of rotation. A helical flight formed on the extruder screw is uninterrupted in at least the metering portion of the screw.

3,762,694

SPRING GROUP

Robert W. MacDonnell, Crete, Ill., assignor to Unity Railway Supply Co. Inc., Chicago, Ill.

Filed Apr. 6, 1970, Ser. No. 25,973
Int. Cl. B61f 5/06, 5/08, 5/12
U.S. Cl. 267—3 5 Claims



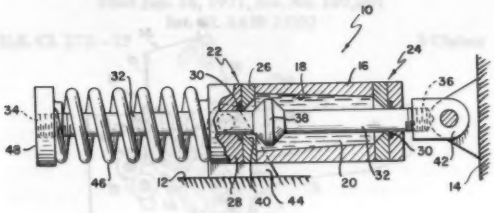
A snubbed spring group comprising a tandem arrangement of first and second deflectable load bearing structures that interact in series for transmitting load forces therethrough. One of the structures is a solid body of elastomeric material, preferably polyurethane, having a hardness in the range from about 60 to about 90 Shore A. The other preferably is a coil spring having a spring rate that is a small fraction of that of the body of elastomeric material.

3,762,695

SHOCK ABSORBER

Valmore F. Devost, Silver Spring, Md., assignor to the United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 19, 1972, Ser. No. 219,051
Int. Cl. B60g *11/56*
U.S. Cl. 267—34 7 Claims



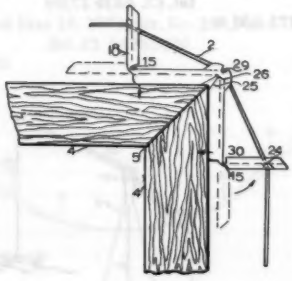
A shock absorber for absorbing shocks incident to high velocity impact including a cylindrical housing having a tapered bore formed axially therein. A metering rod is slidably positioned longitudinally within the housing having end portions extending therebeyond with one of the end portions connectable to the movable object. An enlarged piston is formed on that portion of the metering rod which is contained within the housing bore. A high viscosity fluid medium, such as Duxseal, fills the chamber defined by the housing bore.

3,762,696

FRAMING CLAMP

Donald G. Falk, 147 Tanglewood Dr., Louisville, Ky., and Gerhard I. Konermann, 5510 Briscoe Ln., Louisville, Ky.

Filed Dec. 6, 1971, Ser. No. 205,063
Int. Cl. B25b *5/14, 1/24;* B66f *1/00*
U.S. Cl. 269—108 9 Claims



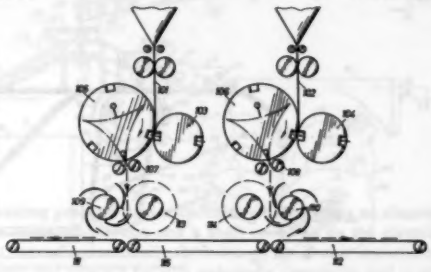
A framing clamp for aiding in the assembly and repair of frame construction, comprising a plurality of corner members, a strap trained over said corner members and a method of applying tension to said strap to apply compressive forces to the corner members and to the frame elements. The tensioning means involves hinged extensions of the projecting legs of the corner members which, when placed in perpendicular disposition relative to the long axis of the projecting legs applies tension to the encircling strap and co-acts therewith, to apply compressive forces to the corner members and to the frame elements held in engagement thereby.

3,762,697

FOLDER DELIVERY OF WEB-FED ROTARY PRINTING PRESSES

Hans-Bernhard Bolza-Schunemann, Wurzburg, Germany, assignor to Schnellpressenfabrik Roenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Filed Mar. 25, 1970, Ser. No. 22,432
Claims priority, application Germany, Apr. 3, 1969, P 19 17 235.1
Int. Cl. B41f *13/58*
U.S. Cl. 270—6 2 Claims



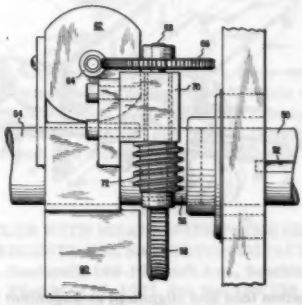
A delivery mechanism for a single or double folder in which underneath each individual folder a pair of fan shafts are mounted to which fan paddles may be removably secured so that, if both folders of a double folder are in operation, one fan shaft of each pair is left without paddles and only the paddles on the other fan shafts receive the folded products from the associated folders and deposit them on separate conveyer belts, while when one folder of a double folder including the associated fan shafts is stopped and all webs are passed from the press to the other folder or when only one folder is provided, one half of the usual number of paddles of one fan is secured to each of the other pair of fan shafts but in a staggered relation to each other so that these fans will then alternately deposit the products upon one conveyer belt and then upon another adjacent conveyer belt.

3,762,698

DRIVE CONNECTION BETWEEN A PRINTING PRESS AND A FANFOLDING MACHINE

Charles D. Thomas, Hamburg, N.Y., assignor to F. M. Biggar, Jr., Hamburg, N.Y.

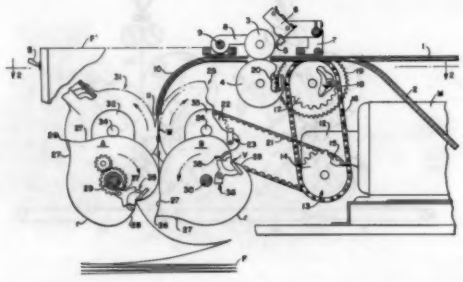
Filed Dec. 29, 1971, Ser. No. 213,512
Int. Cl. B41f *13/56*
U.S. Cl. 270—20 3 Claims



A drive connection between a printing press and a fanfolding machine includes a gear connection in a shaft drive allowing advancement or retardation of one section of the shaft

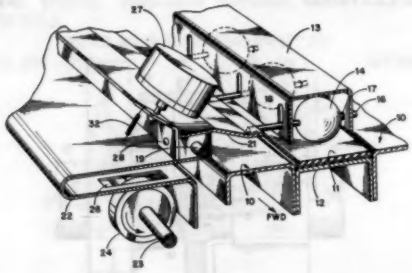
with respect to the other. The printing press directly drives the paper feeding portion of the fanfolding machine whereas the timing drive coupling is interposed between the printing press drive and the fold and feeding mechanisms of the fanfolding machine.

3,762,699
FAN FOLD APPARATUS
James M. Wing, 529A Southampton Dr., Silver Spring, Md.
Filed Dec. 2, 1970, Ser. No. 94,249
Int. Cl. B65h *45/16*
U.S. Cl. 270—73 **23 Claims**



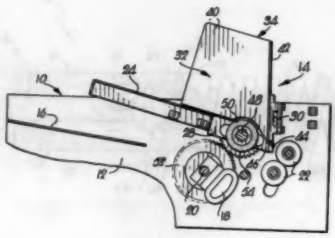
An apparatus for fan-folding web material includes a pair of contra-rotating folding rollers having an irregular yet congruent configuration comprising a heart-shaped profile whereby the grain of the web is broken as each roller point forces the web into the "V" of the adjacent roller. Means are provided to rotate one roller at a constant angular speed while the second roller is driven at a variable angular speed to insure a constant tangency between the rollers without any slippage therebetween. The final creasing of the web is achieved by means of a clamping unit adjacent each roller "V" which is actuated by epicyclic gearing and cams within the roller.

3,762,700
ALIGNING DEVICE
John Allan Peterson, New Brighton, and Jerome L. Johnson, St. Paul, both of Minn., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Dec. 20, 1971, Ser. No. 209,805
Int. Cl. B65h *9/10*
U.S. Cl. 271—49 **10 Claims**



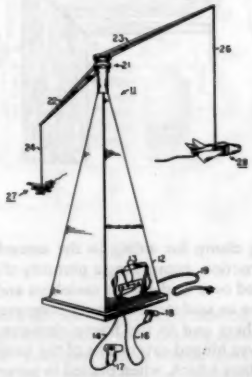
A combination feed and alignment arrangement is provided for use in a document transfer device wherein the document feed means and a document aligning means which is continuously in operation are combined such that a document is transferred from the influence of one means to the other by a pivotable control means.

3,762,701
AUXILIARY STIFF SHEET FEEDER FOR NEWSPAPER SECTION COLLATING MACHINE
Warren W. Hannon, P.O. Box 103, Olathe, Kans., and Charles N. Hannon, Olathe, Kans., assignors to said Warren W. Hannon, by said Charles N. Hannon
Filed May 17, 1971, Ser. No. 143,880
Int. Cl. B65h *1/06*
U.S. Cl. 271—115 **2 Claims**



A vertical stack of stiff sheets is received by the hopper of the feeder with the sheets in a forwardly inclined condition and is supported beneath its lowermost sheet by a series of gripping rollers which are driven by a common shaft. A one-way clutch coupling the shaft with an oscillatory drive element causes the rollers to be driven only during one stroke of the element, at which time the leading end of the lowermost sheet is forced against the front of the hopper to bend the sheet and direct the same down and out the hopper outlet for introduction between a pair of rapidly rotating delivery rollers. The delivery rollers pull the sheet from the gripping rollers at an increased speed, and a friction clutch associated with the gripping rollers retards the freewheeling tendencies of the gripping rollers during this period. A retaining member having an abrasive or irregular outer surface projects into the hopper outlet to prevent more than one of the sheets from being fed at the same time.

3,762,702
REMOTE CONTROLLED TETHERED TOY
Eldon R. Keele, 629 Cassou Rd., San Marcos, Calif., and Richard V. Keele, 4287 47th St., No. 3, San Diego, Calif.
Filed May 20, 1971, Ser. No. 145,294
Int. Cl. A63h *27/04*
U.S. Cl. 272—31 A **1 Claim**



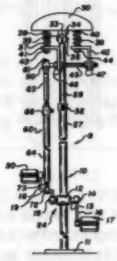
A remotely controlled tethered toy in which a pair of airplanes are suspended from individual arms, the arms being in-

dividually rotatably coupled to the top of a pylon with electrical power being supplied to electric motors in each of the toys through slip rings and a pair of individually controlled switches.

3,762,703
EXERCISING APPARATUS

Thomas T. Gibbs, 1539 Edgeware Rd., Victoria, British Columbia, Canada

Filed Jan. 18, 1971, Ser. No. 107,001
Int. Cl. A63b *23/02*
U.S. Cl. 272—73 **3 Claims**

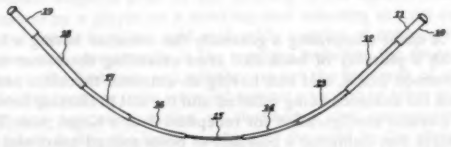


Exercising apparatus having a frame which supports a seat and a pair of handle bars. A bicycle-type pedal mechanism is mounted on the frame to be operated by a person occupying the seat and normally steadying himself in a substantially uprignt position by holding the handle bars. The seat is mounted on the frame for side to side rocking movement about an axis extending longitudinally of the frame. A connecting rod and associated drive-transmitting parts connect the pedal mechanism to the seat so that the pedal action imparts a rocking motion to the seat which requires the user of the apparatus to exercise his body in the region of the pelvis to match the movement of the seat.

3,762,704
TELESCOPIC JUMP ROPE TOY WITH SELECTIVE LATCHING STRUCTURE

Claude A. Gingras, Lotbiniere, Quebec, Canada, assignor to The Raymond Lee Organization, New York, N.Y., a part interest

Filed May 19, 1972, Ser. No. 254,908
Int. Cl. A63b *5/20*
U.S. Cl. 272—75 **3 Claims**

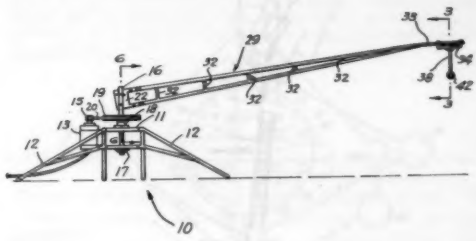


A toy for children, fabricated of two sets of joined telescopic sections of flexible multi-colored plastic tubing. Each section of tubing contains spaced interior projections to serve as bearing points to furnish a smooth sliding effect to the outer diameter of the next inner telescoped section which rides on the projections. To provide for selective movement of each inner telescopic section through the next outer section in which it rides, each inner section is provided with spaced exterior projections on the outer end thereof. These exterior projections must be properly oriented with respect to the inner projections of the next outer section to permit movement of the inner section through the outer section. The innermost section is a solid flexible plastic rod which joins the two opposed sets of telescopic sections.

3,762,705
BATTING PRACTICE DEVICE

Bartolome Bauza Gonzalez, Box 7722, Barrio Obrera Station, Santurce, P.R.

Filed Oct. 1, 1971, Ser. No. 185,566
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 R **2 Claims**

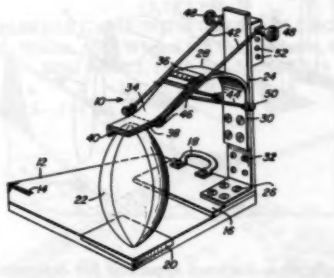


A batting practice device includes a base having an electric motor mounted thereon and a shaft revolved by the electric motor extending vertically thereabove. An arm is secured to the shaft and extends radially outwardly therefrom and is adjustable on the shaft to raise or lower the outer end thereof. A bracket is journaled on the outer end of the arm about an axis lying substantially on a radius of a shaft on the base. A baseball is mounted on the bracket in a position to be struck by a baseball bat as the arm revolves about the base.

3,762,706
FOOTBALL KICKING TEE

Marvin R. Cavett, 3407 W. Main, Houma, La.

Filed Mar. 29, 1972, Ser. No. 239,198
Int. Cl. A63b *67/00*
U.S. Cl. 273—55 B **11 Claims**



A football kicking tee comprising a lever arm pivotally mounted to a support base and adapted to retain a football in place-kicking orientation, and adjustable release means associated with the lever arm to flip it away from the ball subsequent to impact of a kicker's foot with the ball.

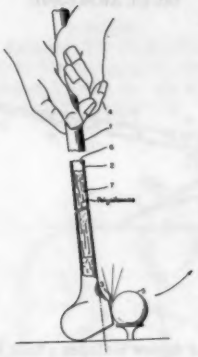
3,762,707
GOLF CLUB WITH MEANS WITHIN THE SHAFT TO RIGIDITY THE SAME UPON IMPACT

Salvatore L. Santorelli, 160-14 Tenth Ave., Beechhurst, N.Y.

Filed May 17, 1971, Ser. No. 144,220
Int. Cl. A63b *53/00*
U.S. Cl. 273—80 B **4 Claims**

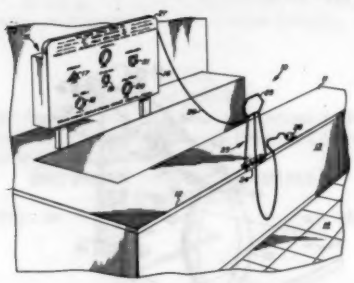
A golf club comprising a hollow shaft with a grip at one end and a club head attached to the other end. The shaft is made of a material to impart a predetermined flexibility to the shaft. The shaft is partially filled from the attachment end up to a

predetermined distance within the shaft with a normally flexible plastic material, preferably a polysiloxane composition, that does not alter the predetermined shaft flexibility under



static conditions but has the characteristic of increased rigidity upon impact thereby imparting rigidity to the flexible shaft at the time of impact of the club head with a golf ball.

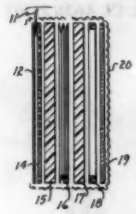
3,762,708
TETHERED BALL DISCOUNT DETERMINING APPARATUS
Ally Ong Hing, 1245 E. Prince Rd., Tucson, Ariz.
Filed Mar. 1, 1972, Ser. No. 230,707
Int. Cl. A63b *72/00*
U.S. Cl. 273—98 **2 Claims**



This specification discloses apparatus for determining the discount which may be granted to a customer in a retail establishment, such as a food store, with the quantity and amount of the discount being determined by the skill of the customer in delivering a missile to a target board. The apparatus includes as a characteristic and essential element a checkout counter. The customer stands on one side of the counter and the target board is located on the opposite side.

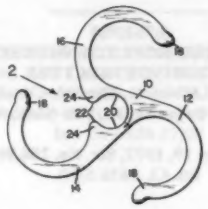
3,762,709
ARCHERY TARGET INCLUDING A RESILIENT SHOCK ABSORBING LAMINATION
August F. Roloff, and Mina S. Roloff, both of R.D. 1, Box 182 H, Morganville, N.J.
Filed Dec. 12, 1972, Ser. No. 314,388
Int. Cl. F41j *3/00*
U.S. Cl. 273—102 B **4 Claims**

This disclosure describes a laminated arrow stopping archery target including a first lamination of corrugated board with a target design thereon and a second lamination or pad of an elastic material into which the arrows normally penetrate and a third lamination of elastic material that is separated from said second layer but held in an attached relationship to said second lamination by a peripheral stretchable band that permits movement of said third lamination away from said second lamination when a penetrating arrow pierces the first



and second laminations and exerts a force against said third lamination, and a back-up board as a fourth lamination being cemented to said third lamination to provide a stop for any arrow piercing the first, second and third laminations, said fourth lamination may also be spaced from said third lamination in a further embodiment.

3,762,710
QUOIT HAVING HOOKED END PORTIONS AND AN OPENING IN THE CENTER HUB
David D. De Coninck, 33 Milk St., Fitchburg, Mass.
Filed June 20, 1972, Ser. No. 264,614
Int. Cl. A63b *65/10*
U.S. Cl. 273—106 C **6 Claims**

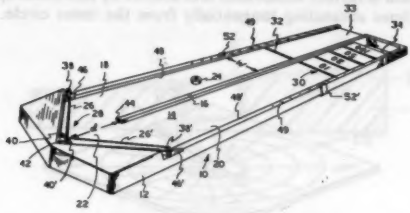


A quoit comprising a generally flat member having a hub with a plurality of hook-like arms extending therefrom in a common plane, said hub having an entrance thereinto and a slot the entrance being reduced and the slot preferably having a circular configuration for reception over a target post. The target may comprise a plurality of posts spaced apart and includes a bottom disc aiding in holding the post upright and also used in the scoring.

3,762,711
PORTABLE SHUFFLEBOARD GAME
Julius Cooper, New Hyde Park, N.Y., assignor to Ideal Toy Corporation, Hallis, N.Y.
Filed June 1, 1971, Ser. No. 148,370
Int. Cl. A63f *3/00*
U.S. Cl. 273—126 R **6 Claims**

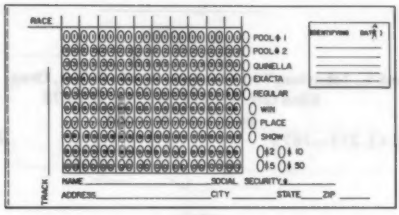
A lightweight portable shuffleboard game is described wherein an integrally molded plastic base is formed with a puck-sliding playing surface. The playing surface is separated by a divider into a pair of parallel alleys which meet at a fold region where a V-shaped rebounding device is located. The rebounding device is formed with a pair of resilient cushions

oriented to bounce pucks traveling along one forward alley from one cushion to the other cushion and then onto the other alley towards a scoring area. The spacing of the rebounding



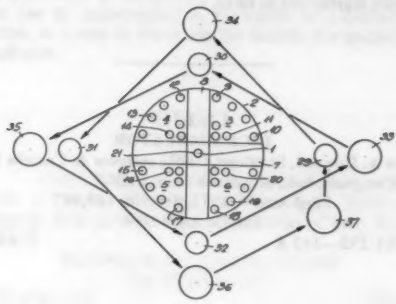
device from the divider is selected commensurate with the length and width of the forward alley to assure that pucks reach the scoring area along a double bounce path for enhanced skillful scoring with the shuffle-board game.

3,762,712
RACING GAME APPARATUS
Robert W. Beachley, P.O. Box 11281, Charlotte, N.C.
Filed Oct. 14, 1971, Ser. No. 189,119
Int. Cl. A63f 5/00
U.S. Cl. 273—130 H **2 Claims**



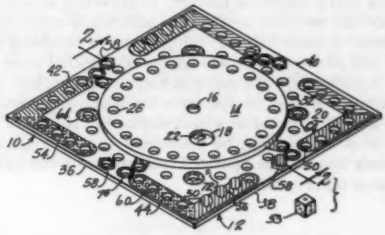
A game which may be played by normally two or more children or adults typically including the use of a playing board having a center thereon with the spinner centrally mounted within a circle having a plurality of rays extending from the center of the circle in which each ray represents a different horse and each ray is further subdivided into the categories of win, place and show, whereby by the spinning of the spinner, an arrow on the spinner comes to rest pointing at one of win, place, or show, of one of the horses signifying the winning of that race characterized by the spinning of the spinner, the amount wagered prior to the spinning of the spinner being marked by a player on a marking card selecting at least one horse for at least one and preferably a series of consecutive races, and concurrently in the marking including the amount bet on the first race and whether or not the proceeds of any winning race are to be wagered against a second or other subsequent occurring racing of the horse also concurrently marked during the initial marking of the card by the player, the amount payable on any particular horse for any one of win, place, or show being determined by a keeper of the wagers who after all wagers are in draws a separate card for each potential winning position — i.e., win, place, or show, on which a wager has been tendered for each horse on which a wager has been tendered, subsequent to the marking and prior to the spinning of the spinner the keeper authenticating a wager by certifying a card prepared by a player and returning a certified carbon copy thereof to the player, and thereafter either the keeper or any one or more of the players spinning the spinner, each spin representing a separate race, prior to the initial spinning the keeper of the wagers for each horse wagered drawing a separate "pay" card for that horse from a deck of "pay" cards, each "pay" card indicating the multiple of the amount wagered that will be paid as winnings for that particular horse's position if such a position is a winner.

3,762,713
BOARD GAME
Jimmie Fields, Los Angeles, Calif., assignor to The Raymond Lee Organization, New York, N.Y., a part interest
Filed Dec. 29, 1972, Ser. No. 319,206
Int. Cl. A63f 3/00
U.S. Cl. 273—130 R **3 Claims**



A game board has a center and a main circle having an axis coincidental with the center of the board. The main circle is divided into four sectors of the same area each smaller than that of a quadrant of the circle and each of a color different from the others. The circle has a pair of strips marked therein of equal dimensions separating the sectors and intersecting each other at the center of the board. Each sector has a plurality of spaced minor circles therein having a diameter equal to a fraction of the diameter of the main circle and of different colors. A central circle having a diameter equal to that of the minor circles and of a color different from the minor circles has an axis coincident with the axis of the main circle and the center of the board. Each of a plurality of rectangular areas outside the main circle has a plurality of spaced areas marked therein.

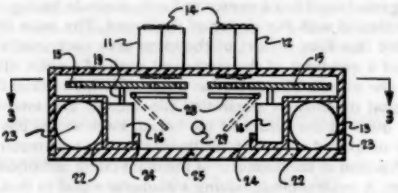
3,762,714
MARBLE GAME WITH TURNTABLE BOARD
Julian L. Wilson, 3867 Wieuca Rd. N.E., Atlanta, Ga.
Filed Feb. 22, 1972, Ser. No. 228,118
Int. Cl. A63f 3/00
U.S. Cl. 273—134 GA **9 Claims**



A marble game played on a rectangular game board that has marble depressions in different locations representing the path of the travel of the colored marbles used by each player and there being a turntable in the middle of the board having marble depressions therein. There is a starting position and home area at each corner of the board for one or more players and each has a different colored marble and a different colored "start" position. Each player may have four marbles located in a row of four marble depressions and the game is started by one of the players rolling a die for the required number to start the game. Players take turns in succession and there is a step-up location on the board which is the "ready" position to

move to the turntable. Whenever the player qualifies for movement to the turntable it is set in position according to a circular arrangement of numbers on the base board and beneath the turntable, which are exposed through a hole in the turntable. Thus, if the player rolls a number on the die to get on the turntable the turntable itself is set to that number and so forth. There are other rules of the game which are variable such as penalties when another player lands on the other player's marble and so forth.

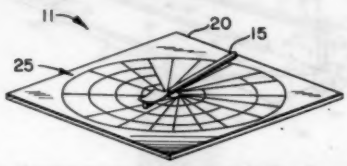
3,762,715
DICE SIMULATOR
James A. Howard, Saratoga, Calif., assignor to Casselle Novelty Company, Inc., Mountain View, Calif.
Filed Aug. 9, 1971, Ser. No. 169,907
Int. Cl. A63f 5/04
U.S. Cl. 273—142 A **4 Claims**



A die is simulated by apparatus including surface such as a disk or cylinder that is driven and positioned by a motor having six stable states of quiescence or equilibrium. The movable surface is divided into six sectors which are randomly presented to an optical system each time the motor stops. Each sector contains an optical pattern that is transmitted by an optical system to a representation or simulation of a face of a die. The optical system may include seven "light pipes" or acrylic rods which extend from a position adjacent to the movable surface to the simulated face of the die. The optical pattern may comprise a plurality of reflectors attached to or part of the movable surface for selectively reflecting back overhead or room lighting falling upon the simulated die face such that selected pipes will appear illuminated upon the die face. Alternatively, the movable surface may include an optical pattern of holes or apertures for selectively passing light from a fixed reflector or a light source to the optical system. One or more dice may be positioned upon a board or base structure and may be operated from the same electrical push button or other control.

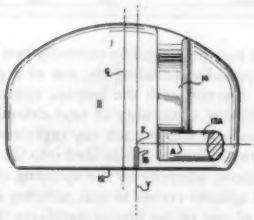
3,762,716
FORTUNE TELLING GAME
Poney Horton, 1810 Hickory St., Savannah, Tenn.
Filed Oct. 18, 1971, Ser. No. 190,077
Int. Cl. A63f 9/18
U.S. Cl. 273—161 **9 Claims**

A fortune telling game device comprising a playing board and a rotatable pointer. The pointer is spaced above and pivotably connected at the center of the playing board and comprises an elongate rod and, located at one end of the rod, a contoured guiding member having a recessed arcuate top surface for comfortably receiving the fingers of the participant. Inscribed on the board is an indicia bearing annular shaped field subdivided into three subfields by three spoke-like lines emanating tangentially from the inner circle. Each subfield is further subdivided into sectors by additional spoke-like lines emanating tangentially from the inner circle. The



sectors in two of the subfields are subdivided into portions by one or more arcs concentric with the overall field. Inscribed in each portion and nonsubdivided sector is an associated indicia that is either a letter, a number, a name of a calendar month, a symbol or a word. The game is played by proposing a question and then rotatably guiding the pointer using subliminal impulses subconsciously transferred thereto by the fingers of the participant resting on the guiding member. The pointer sequentially indicates the selected indicia that comprise the answer to the proposed questions.

3,762,717
GOLF CLUB
Frank L. Johnston, 790 Windgate South, Salem, Oreg.
Filed Oct. 6, 1971, Ser. No. 187,075
Int. Cl. A63b 53/04
U.S. Cl. 273—167 F **2 Claims**

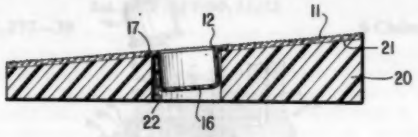


A golf club having an irregularly shaped shank structure intermediate the club head and club shaft so as to locate a downward extension of the shaft axis in intersecting relationship with a force vector resulting from ball impact. The mass of the club head and shank structure is symmetrical relative to said vector upon ball impact occuring within a desired zone on the club face. Another important object of the present club is the disposition of a club head mass offset in a parallel manner from the head centerline. The mass extends rearwardly in a raised manner from the top surface of the club head. The mass is in the form of an elongate arm and stabilizes the club head during ball impact to maintain the club's striking face normal to the desired line of ball travel.

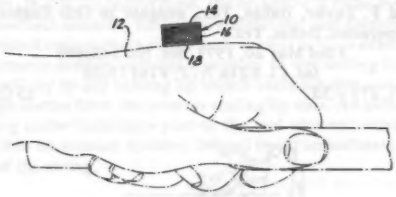
3,762,718
GOLF PUTTING PRACTICE DEVICE
John Ernest Culley, 1301 Brooklawn Dr., Boise, Idaho
Continuation-in-part of Ser. No. 98,427, Dec. 15, 1970, abandoned. This application Mar. 9, 1972, Ser. No. 233,166
Int. Cl. A63b 67/02
U.S. Cl. 273—176 H **2 Claims**

A golfing device comprising an elongated flexible playing surface having a ball receiving cup mounted therein at one

end thereof and extending downwardly therefrom. A disc having an inclined upper surface with an aperture therein is positioned underneath the playing surface so that the ball receiving cup is movably received in the disc aperture whereby the block may be rotated independently of the playing surface and cup to vary the angle of the playing surface around the ball receiving cup.

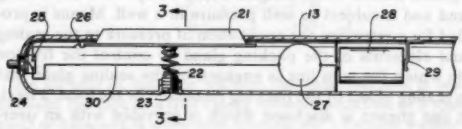


3,762,719
GOLF SWING TRAINING DEVICE
Warren F. Smith, 1111 Keystone Ave., River Forest, Ill.
Filed May 22, 1972, Ser. No. 255,798
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 B **6 Claims**



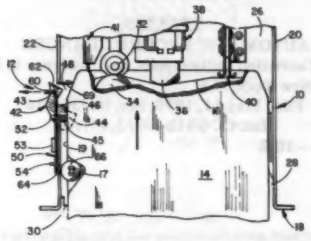
A golf instruction device in the form of a signal body of negligible weight adapted to be secured to the back of the lower forearm or to the back of the hand uppermost on the club grip to provide a positive indication of proper hand position at the address and during the golf swing. The signal body may take the form of a cylindrical plug of foamed polystyrene or a cylindrical cup-like shell of sheet plastic material including a peripheral flange. Either form may be detachably secured in position by an adhesive. The flange adapts the cup-like shell to be attached to the back of a glove with a couple of tacking stitches. In each form, the upper end of the cylindrical body may exhibit a bright color contrasting from the color of the side walls thereof.

3,762,720
GOLF TRAINING AID
Clayton E. Jett, Riverton, Va., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Aug. 18, 1972, Ser. No. 281,711
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 D **3 Claims**



A training device to warn the golfer, by means of an audible signal, that the strength of his grip on the golf club has fallen below a desirable limit. The device consists of a spring mounted bar which is located in the side of a golf club handle, and protrudes past the surface of the handle. The spring pressure which keeps the bar protruding past the handle is adjustable. When the device is switched ON, the bar in the handle operates as an electrical switch to actuate an internal battery-operated buzzer when the grip pressure of the golfer's hand relaxes on the bar. The device can be incorporated in the handle of a conventional golf club, or it may be fitted into the handle of a special training golf club.

3,762,721
CARTRIDGE LOCKING MECHANISM
Vincent A. Corso, Medinah, and Donald J. Dattilo, Mt. Prospect, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Feb. 8, 1971, Ser. No. 113,215
Int. Cl. G11b *5/78*
U.S. Cl. 274—4 B **12 Claims**

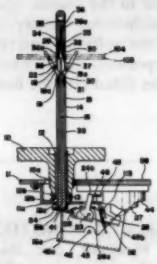


A cartridge locking mechanism for a tape player having a tunnel for receiving a tape cartridge, comprises a pivotally mounted arm having a projection extending into the tunnel in the path of a cartridge received therein. A torsion spring mounted for rotational and torsional movement adjacent the tunnel includes a first end extending outwardly therefrom for engagement with the actuator arm. The second end of the spring extends outwardly toward the cartridge receiving tunnel and includes a roller for receipt in a groove in a side wall of the cartridge. When inserted into the tunnel, the cartridge engages the projection, causing the actuator arm to rotate. Rotation of the arm in turn rotates the torsion spring, thereby to move the roller into the tunnel in engagement with the cartridge in the groove therein. Full insertion of the cartridge into the tunnel "twists" the torsion spring, providing a force at the roller directed against the tape cartridge to maintain the latter secured in the tunnel.

3,762,722
AUTOMATIC RECORD CHANGER DEVICE
Koichi Tajime, Yokohama, Japan, assignor to Victor Company of Japan, Yokohama City, Japan
Filed Aug. 28, 1970, Ser. No. 67,762
Claims priority, application Japan, Sept. 1, 1969, 44/68637
Int. Cl. G11b *17/04*
U.S. Cl. 274—10 S **5 Claims**

An automatic record changer device of the type in which records yet to be played are supported by a plurality of record supporting members pivotally mounted at the upper portion of a spindle adapted to move up and down within a main spindle body and adapted to be withdrawn into the main spindle body

as the spindle moves downwardly so that only the lowermost record may be dropped onto a turntable. The device is capable of detecting the absence of records on the spindle and rendering all the elements of the device inoperative after completion of the playing of the last record.



3,762,723

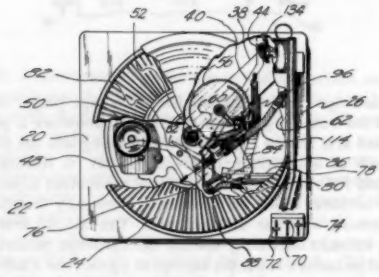
AUTOMATIC RECORD CHANGER

John Allen Tourtellot, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 11, 1970, Ser. No. 36,224

Int. Cl. G11b *17/12, 17/16*

U.S. Cl. 274—10 R **3 Claims**



A simplified phonograph record changer mechanism is provided wherein after the last record has been played, a shut-off stud on the cycling gear contacts a shut-off lever. This imparts a movement to the shut-off lever and causes it to coact with other parts of the changer mechanism effective to move the changer motor power switch to its OFF position. The shut-off lever is positioned to interfere with the shut-off stud's path of travel only after the last record has been played which is determined by the position of the stabilizer arm stab shaft. At all other times, the shut-off lever is positioned so that the shut-off stud will not contact the lever.

3,762,724

SHAFT SEALS

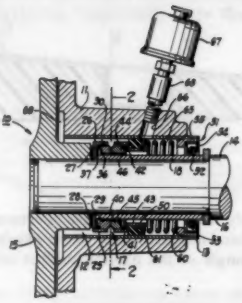
Robert J. Porter, Mansfield, Ohio, assignor to The Gorman-Rupp Company, Mansfield, Ohio

Filed Mar. 8, 1971, Ser. No. 121,958

Int. Cl. F16j *15/36, 15/38, 15/34*

U.S. Cl. 277—21 **5 Claims**

An oil lubricated, face-type shaft seal including a pair of cooperating abrasion-resistant seal rings disposed around a rotatable shaft extending within a shaft opening of a housing structure, an oil seal around the shaft closing the opening at a location spaced from the seal rings, and a source of oil communicating with a chamber between the oil seal and the seal rings for lubricating the mating faces of the rings.



3,762,725

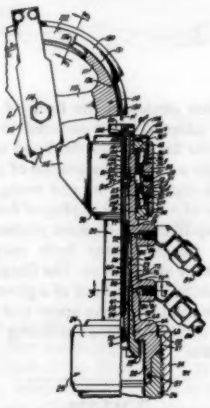
WIRELINE STUFFING BOX AND SHEAVE

Donald F. Taylor, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed May 20, 1971, Ser. No. 145,400

Int. Cl. E21b *7/12*; F16j *15/26*

U.S. Cl. 277—32 **13 Claims**

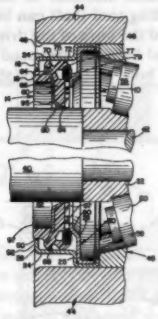


A wire line stuffing box having sealing gland means therein which is normally in an undistorted non-sealing position spaced from the wire line extending through the stuffing box, and which is compressed into sealing engagement with the wire line by hydraulic fluid pressure applied to opposite sides of piston means which longitudinally compresses the sealing gland and is subject to well pressure in a well. Means is provided for controlling the application of pressure to the sealing gland elements of the packing gland to control the friction with which the wire line is engaged by the sealing gland and the sealing effect of the packing elements. In addition, a flexible line sheave is disclosed which is provided with an overrunning structure permitting movement of the sheave wheel after movement of the flexible line is stopped to prevent damage to the line by stretching, abrasion or overstressing due to the momentum of the movement of the sheave wheel when movement of the line is stopped.

3,762,726
FLUID SEAL

Lennart B. Jornhagen, Corona, N.Y., assignor to Chicago Rawhide Manufacturing Company, Chicago, Ill.

Filed Apr. 5, 1971, Ser. No. 131,374
Int. Cl. F16j 9/00, 15/32
U.S. Cl. 277—39 6 Claims

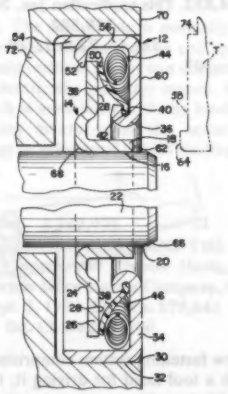


A seal assembly primarily used for retaining oil or other lubricants in an oil bath which lubricates a sealed bearing assembly. In one successful form, the invention is embodied in a unitized seal assembly having an elastomeric seal element and associated casing which rotate with respect to each other. The elastomeric portion includes a primary or wet sealing lip, and an auxiliary or dry sealing lip which excludes dirt and other foreign matter from the primary sealing lip area. An axially extending collar forming a part of the seal element extends at least into an annular opening defined by an imperforate outer wall of the casing.

3,762,727
OIL SEAL

James E. Jackowski, 1016 S. Humphrey, Oak Park, Ill.

Filed Mar. 15, 1971, Ser. No. 124,015
Int. Cl. F16j 15/40, 15/34
U.S. Cl. 277—41 1 Claim

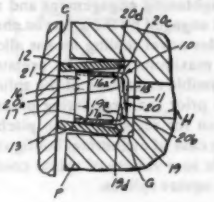


An oil seal of the type wherein the principal seal is made between the face of a first casing member attached to a rotary shaft or disposed in a machine housing and a flexible washer of a lubricous, high temperature resistant polymer held in place within a second casing and urged axially into engagement with the face of the first casing. The seal assembly is a so-called unitized seal, that is, both the relatively fixed and relatively movable casings are preassembled so that the two-piece unit may be fitted as a whole to a shaft and a machine bore while the unit remains assembled. In one embodiment, the flexible, polymeric sealing washer or ring is urged into engagement with the radial face of the casing by an inclined coil spring. In use, the seal is characterized by low wear, by a hydrodynamic sealing action, by relatively great tolerance to radial runout, and by easy and accurate installation which inherently supplies a desired axial preload to the primary seal components.

3,762,728
PISTON RING

Herbert F. Prasse, Town and Country, and Harold E. McCormick, Ballwin, both of Mo., assignors to Ramsey Corporation, St. Louis, Mo.

Division of Ser. No. 802,351, Feb. 26, 1969, Pat. No. 3,606,354. This application Mar. 23, 1971, Ser. No. 127,177
Int. Cl. F16j 9/20
U.S. Cl. 277—140 2 Claims

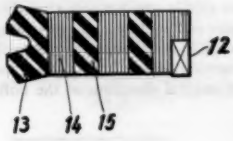


A spacer-expander ring for piston oil ring assemblies which can be economically and easily manufactured in continuous strip form, rolled and cut into split rings of desired size and heat treated to snap into a closed continuous ring with a diameter less than the diameter of the piston for which it is intended. The ring is circumferentially continuous, its ends will not overlap and it has individual spring fingers at its innermost periphery to engage the inner peripheries of thin split rail rings supported thereon.

3,762,729
SEALING RINGS

Helmut Hopp, Hamburg, Germany, assignor to Asbest- und Gummiwerke Martin Merkee KG, Hamburg, Germany

Filed Feb. 11, 1972, Ser. No. 225,504
Int. Cl. F16j 15/20
U.S. Cl. 277—233 6 Claims

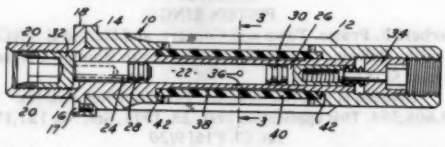


A solid sealing ring for sealing parts that move in a traverse way to the ring surface which comprise a ring formed of an endless cross-sectional area, said ring having a plurality of elastomeric sections which radially covers the entire cross-section and an elastomerized fabric section connecting said elastomeric sections.

3,762,730
HYDRAULICALLY ACTUATED SPLINE ARBOR AND CHUCK CONSTRUCTION

Gordon N. Cameron, 1072 N. Brys, Grosse Pointe Woods, Mich.

Filed Mar. 9, 1972, Ser. No. 233,025
Int. Cl. B23b 31/30, 31/40
U.S. Cl. 279—4 16 Claims

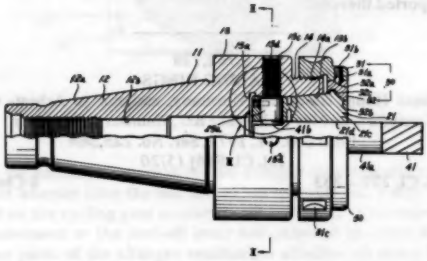


Hydraulically actuated spline arbor and chuck devices having a novel configuration for the spline teeth to produce axially spaced straightening engagement and accurate centering of a splined part engaged by the arbor or chuck. The hydraulic actuation includes novel sealing means allowing a significant increase in the maximum hydraulic pressure obtainable and maximum permissible expansion of the spline without leakage as compared to prior seals rendering practical the relatively greater expansion for registration on pitch diameter or side teeth than in the case of cylindrical configurations. The invention is applicable to a variety of spline configurations including involute and square splines.

3,762,731
CHUCK FOR TOOL

Masakazu Matsumoto, 5-9-2 Higashi-Ishnikiri-cho, Higashi-Osaka-fu, Japan

Filed June 21, 1971, Ser. No. 154,924
Int. Cl. B23b 31/20
U.S. Cl. 279—51 3 Claims



A chuck for tool in which a collet accommodated in a chuck has its diameter reduced by a clamping ring by threading a rotary ring thereon to hold the shank of a tool inserted in the collet and the turning of the tool is prevented by a bushing inserted in a diametral direction of the collet while the tool is held.

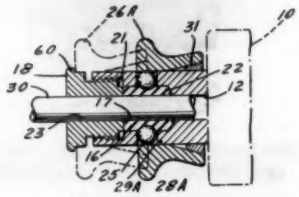
3,762,732
CLAMPING DEVICE OR CHUCK

Russell H. Speed, Reno, Nev., assignor to Standard Pneumatic Motor Company, Reno, Nev.

Filed Feb. 25, 1972, Ser. No. 229,524
Int. Cl. B23b 31/10
U.S. Cl. 279—102 12 Claims

A clamping device for easily and quickly releasing or firmly securing a rotary cutting or grinding tool such as a burr, bit, or the like to a rotatable drive shaft having a longitudinally-extending, toolpshaft-receiving bore at its outer free end for reception of the shaft of rotary cutting tools such as burrs, bits, and the like. A cylindrically-shaped insert of resilient material (e.g. rubber) is disposed axially relative to the drive shaft and in a counter-bore at the free end of said drive shaft, said insert having an axial bore therethrough of approximately the same diameter as the outside diameter of the shaft of the cutting tool, so that the cutting tool shaft can be slipped into and out of the insert bore and the bore of the drive shaft.

A plurality of steel balls are disposed in radial bores in the wall of the counter bore of the drive shaft, and there is cam



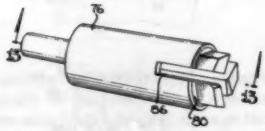
means slideable on the drive shaft for forcing the balls into the insert to thereby compress parts of the insert onto the shaft of the cutting tool and to thereby effect operable clamping of the cutting tool shaft in the clamping device. Sliding the cam means in one direction effects clamping of the cutting or grinding tool shaft in the device, and sliding such cam means in the opposite direction effects release of said cutting or grinding tool shaft so that said cutting tool may be readily removed from the clamp device.

As used herein, the term rotary cutting tool or tools includes various cutting tools such as, for example, bits, burrs, rotary grinding tools and the like.

3,762,733
NAIL SCREW DRIVING TOOL HEAD

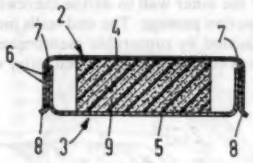
Garnet L. Lana, 20133 Delita Dr., Woodland Hills, Calif.

Continuation-in-part of Ser. No. 769,294, Oct. 21, 1968, Pat. No. 3,654,832. This application Jan. 20, 1972, Ser. No. 219,382
Int. Cl. B23b 31/10
U.S. Cl. 279—103 2 Claims



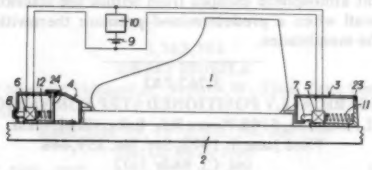
A nail screw fastening system comprising a novel nail screw together with a tool head for driving it, the nail screw being easily fabricable by rolling or stamping threads on the pointed end of stamped nail stock so that the thread ridges project radially outward beyond the nail shank, and by cutting V-shaped peripheral notches in the nail head to form flanges. The driving tool head is an elongate body adapted at one end for coupling to a source of rotary motion, its other end having an axial passageway of cross section complementary to the cross section of the nail screw head flange and terminating in an end wall.

3,762,734
SKIS
Raimund W. Vogel, Lierstrasse 25, Munich, Germany
Filed May 28, 1971, Ser. No. 147,784
Claims priority, application Germany, Aug. 7, 1970, P 20 33 845.8
Int. Cl. A63c 5/12
U.S. Cl. 280—11.13 L 2 Claims



The specification describes a ski with an elongated hollow girder made up of two shells. The two shells are generally U-shaped and have approximately parallel surface parts, with a facing of at least 0.2 mm, in each side wall of the respective ski. These surface parts are connected by a shock absorbing plastic material so as to provide a firm joint between them.

3,762,735
SKI BINDING
Thomas Gordon Smolka, Vienna-Mauer, Austria, assignor to Gertsch AG, Zug, Switzerland
Filed Sept. 15, 1971, Ser. No. 180,808
Claims priority, application Austria, Oct. 14, 1970, 9242/70
Int. Cl. A63c 9/08
U.S. Cl. 280—11.35 M 9 Claims

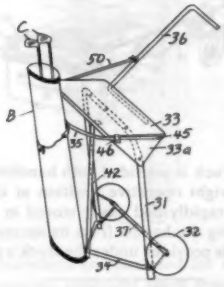


Safety ski binding. The ski binding is normally held in engaged position by resilient means such as coil springs and is convertible against said resilient means to a condition for freeing the ski boot by electrically energizer means. An acceleration responsive switch is associated with the binding to energize the boot freeing means upon the occurrence of a predetermined change in velocity of the ski binding and means associated therewith.

3,762,736
HITCH FOR USE WITH SLEDS AND THE LIKE
Robert D. Johnson, Gurnee, and Chester Hook, Waukegan, both of Ill., assignors to Jerry Martin Company, Gurnee, Ill.
Filed Sept. 3, 1971, Ser. No. 177,641
Int. Cl. B62b 15/00
U.S. Cl. 280—24 9 Claims

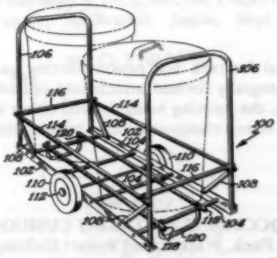
A hitch adapted for connecting sleds and the like to snowmobiles. The hitch includes a universal connection at the snowmobile and a swivel connection at the sled. The connection to the sled is by means of a pair of elongated members clamping a forward portion of the sled therebetween for improved control of the towing action. The hitch includes means for ready removable installation.

3,762,737
FOLDABLE CART WITH SEAT
Milton W. Good, 147-37 Ash Ave., Flushing, N.Y.
Filed Nov. 2, 1971, Ser. No. 194,871
Int. Cl. B62b 1/00
U.S. Cl. 280—36 C 11 Claims



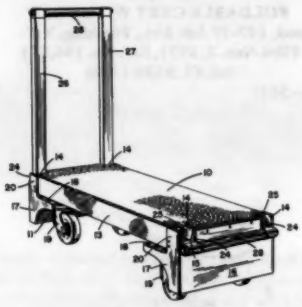
A foldable golf cart has means for carrying golf clubs and a stool-height seat extending the full width of the cart. Legs and also wheels are provided at opposite sides of a main frame that supports its seat and a third leg pivotally connected to the frame at its top holds the foldable club carrying means in operative position, a foldable handle extends forwardly and upwardly from the frame.

3,762,738
CONTAINER CARRYING CARTS
Paul J. Christina, 9330 Chicago Ave., Bloomington, Minn.
Filed Nov. 15, 1971, Ser. No. 198,724
Int. Cl. B62b 1/10
U.S. Cl. 280—47.19 11 Claims



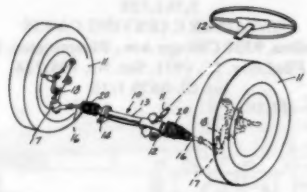
A container carrying cart, having handles at either end, a single pair of wheels attached at either end of a transverse axle located at the balance point of the cart, and a pair of "kick-stands" located at either end of the cart for supporting the cart when at rest. Each "kick-stand" having a set position and a retracted position, the stand moving from the set to the retracted position in response to a slight forward motion of the cart accompanied by a slight downward pressure on a handle.

3,762,739
HAND TRUCK
Michael A. Tabet, 1336 Ballentine Blvd., Norfolk, Va.
Filed Jan. 13, 1972, Ser. No. 217,560
Int. Cl. B62b *11/00*
U.S. Cl. 280—47.37 6 Claims



A lightweight truck is provided with handles which may be secured in an upright operative position at the ends of the truck or may be rapidly and easily stored in an inoperative position by pivoting the handle from its secured position and sliding it along rails provided under the truck's platform.

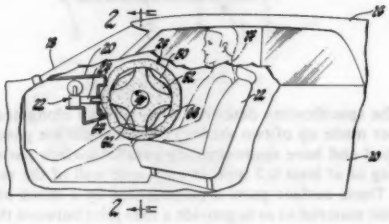
3,762,740
BOOT SEAL CONSTRUCTIONS FOR RACK AND PINION GEAR
Richard Cass, Birmingham, Mich., assignor to TRW Inc., Cleveland, Ohio
No Drawing. Filed Nov. 9, 1971, Ser. No. 196,977
Int. Cl. B62d *7/00*
U.S. Cl. 280—96 4 Claims



A boot seal for rack and pinion steering gear assemblies having an integrally formed attachment opening for a fluid transfer tube, the opening being formed either as a nipple on the boot seal or as a clamp associated opening through the end of the seal.

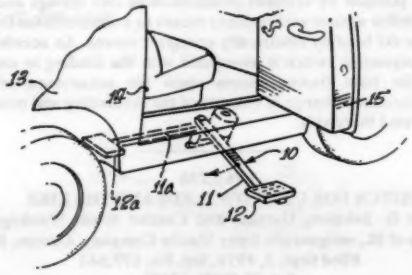
3,762,741
OCCUPANT RESTRAINT CUSHION
Lawrence L. Fleck, Warren, and Robert Hickling, Royal Oak, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 4, 1971, Ser. No. 186,326
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB 3 Claims

An occupant restraint cushion includes radially spaced inner and outer cylindrical walls. End partitions join the end edges of the inner and outer walls and cooperate with axially spaced intermediate partitions to divide the cylindrical space between the inner and outer walls into a plurality of side-by-side pressure fluid receiving chambers. The intermediate partitions are apertured for cross communication of the chambers. A generally cruciform shaped end wall extends across each end opening of the inner wall and has the arms thereof joined to the inner surface of the inner wall. Arcuate cutouts of the end walls open to the inner surface of the inner wall and define therewith ambient atmosphere induction inlets. A valve member of flexible material is provided for each inlet. The valve member has one end secured to the end wall adjacent a respective cutout and has the sides thereof secured to the inner surface of the inner wall to define therewith an ambient atmosphere induction passage. The end walls include pressure relief openings sealed by rupturable membranes. A manifold or diffuser extends between the inner and outer walls axially of



the cushion and opens to each pressure fluid receiving chamber for inflation of such chambers and shaping of the cushion when the diffuser is connected with a pressure fluid source. The induction passages permit the introduction of ambient atmosphere into the interior of the inner wall when the pressure fluid chambers are inflated and remain open as long as there is no pressure differential. Upon occupant engagement with the cushion, the increase in pressure within the interior of the inner wall forces the valve members against the inner surface of the inner wall to close the induction passages. Ambient atmosphere escapes from within the interior of the inner wall when a predetermined pressure therewithin ruptures the membranes.

3,762,742
ELECTRICALLY POSITIONED STEP FOR VEHICLES
Victor L. Bucklen, 5108 Pierce Rd., Bakersfield, Calif.
Filed June 5, 1972, Ser. No. 259,448
Int. Cl. B60r *3/02*
U.S. Cl. 280—166 3 Claims

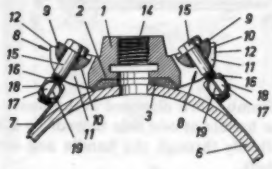


A step assembly for mounting to a vehicle frame under the vehicle door. The step assembly includes a rotatably mounted bracket which carries a tread plate. Also included in the assembly are a small reversible electric motor, a screw actuator for the movable bracket, and an electrical system which positions the step tread either in an extended position in front of and below the vehicle door, or in a retracted position nested against the frame of the vehicle. In its preferred form, the electrical system of the step assembly automatically moves the tread plate to extended position when the vehicle door is open, and retracts the tread plate to nested position when the vehicle door is closed.

3,762,743
PIPE DRILL CLIP

Erwin Hawle, Wagrainerstrasse 13, Vocklabruck, Austria

Filed Dec. 4, 1972, Ser. No. 311,785
Claims priority, application Austria, Dec. 23, 1971, 11061
Int. Cl. F16l 41/00
U.S. Cl. 285—197 1 Claim



A saddle member has an axial through bore and is adapted to be applied to a portion of the periphery of a pipe to be drilled. The saddle member is provided on opposite ends with abutments. A clamping band is adapted to embrace another portion of the periphery of said pipe and has two end portions, each of which has a central longitudinal recess and two side strips on opposite sides of said recess. Bearing members bear on said abutments on the side of the saddle member remote from said clamping band. Bolts extend through said bearing members and said abutments and having each a head, which is disposed on the side of said bearing member remote from said abutment and engageable to rotate said bolt, and a screw-threaded shank disposed on the side of said saddle member facing said clamping band. Tightening nuts are threaded on said shanks and comprise each two diametrically opposite, laterally protruding pins, each of which is formed with a slot. Each of said side strips is wound on one of said pins and extends into the slot thereof.

3,762,744
ORBIT MOBILE

Donald Michael Sidlauskas, 3950 N.W. 32nd Ter., Fort Lauderdale, Fla.

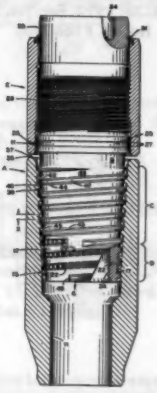
Filed Sept. 29, 1971, Ser. No. 184,760
Int. Cl. B62k 1/00
U.S. Cl. 280—207 1 Claim

A novel type of vehicle for transporting a person and giving a new kind of ride, the device consisting of a circular ring for travel on the ground, and having a toothed track on its inner side on which a foot pedal operated scooter travels and on which a person sits, so that the scooter and person are located inside the circular ring; the travel of the scooter in the ring causing the ring to move.

3,762,745
CONNECTION MEMBERS WITH HIGH TORQUE CARRYING CAPACITY

Robert A. Cunningham, Bellaire, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Apr. 3, 1972, Ser. No. 240,462
Int. Cl. F16l 15/00
U.S. Cl. 285—92 6 Claims

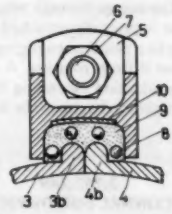


Connection members are disclosed for withstanding large torques but requiring relatively small make-up or breakout torques. They utilize threaded boxes and pins having their threads spaced to permit a selected amount of telescopic movement when initially connected. When telescoped to a predetermined position, locking means such as splined threads, capable of carrying large torques, engage or lock to prevent relative rotational movement between the members. A make-up means, such as a threaded sleeve, telescopes the locking means to a locked or an unlocked position. An alignment element or means is disclosed to align the splined threads for locking. Also, seal means are disclosed to prevent fluid flow past the threads if fluid flows through an axial bore in the members, as occurs when the members are used as tool joints in rotary well drilling.

3,762,746
PIPE CONNECTION WITH REINFORCED SEAL

Taro Amada, Ota-ku, Tokyo, Japan, assignor to Yamamoto Sangyo Kabushiki Kaisha, Osaki-shi, Japan

Filed Sept. 8, 1971, Ser. No. 178,617
Claims priority, application Japan, Sept. 18, 1970, 45/81212
Int. Cl. F16l 27/00
U.S. Cl. 285—184 1 Claim



A piping line having sections solidly connected at any desired angle by means of connecting two semispherical couplings with slanted surfaces at 45° to a sphere in respective slant surface, and fastening the couplings to each other with a fastener assembly which has a sealing ring reinforced with steel balls.

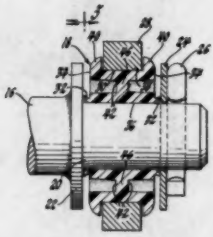
ERRATUM

For Class 285—197 see:
Patent No. 3,762,743

3,762,747
GROMMET

Thomas J. Griffen, Dearborn, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 25, 1972, Ser. No. 291,999
Int. Cl. F16b 7/00
U.S. Cl. 287—85 R **4 Claims**

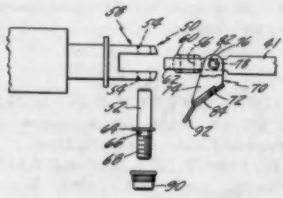


The drawings illustrate an improved polyurethane grommet having means integrally formed thereon for providing the "rate," "tuning" or damping, and lash take-up characteristics preferred for the efficient interconnection of two adjacent members of a linkage system.

3,762,748
LINKAGE CONNECTING MEANS

Larry E. Anders, Palm Springs, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed June 30, 1972, Ser. No. 267,820
Int. Cl. F16c 11/06
U.S. Cl. 403—156 **4 Claims**



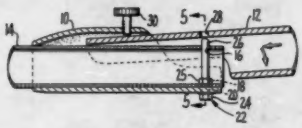
A linkage connecting means for interconnecting two members having aligned openings through which a pin is located. A pin holding member is pivotally attached to one of said members and is movable to a position engaging said pin to hold it in position and prevent it from rotating. A nut is placed on the threaded end of a projection extending through the pin holding member and is tightened against the bottom of the holding member.

3,762,749
CONNECTOR DEVICE

Andrew L. Pansini, 27 Larkspur St., San Rafael, Calif.

Filed Apr. 12, 1972, Ser. No. 243,250
Int. Cl. F16d 1/00
U.S. Cl. 403—341 **3 Claims**

A connector device for connecting pool cleaning tools to a conventional tubular handle or pole includes a tubular sleeve, having a portion of one side cut away, disposed around the handle adjacent one end thereof, and a tubular shaft attached to the cleaning tool, which has a portion of one side cut away. The tubular shaft projects along the outer surface of the handle and under the inner surface of the sleeve and is secured

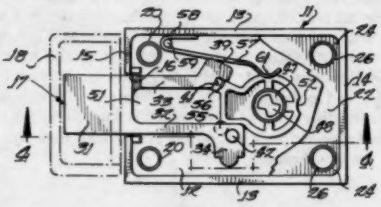


therein by a thumb screw disposed in the sleeve. The sleeve is secured to the handle at one side thereof by a bolt which extends diametrically through the handle and into a hole provided in the shaft.

3,762,750
DEAD BOLT LOCK

John L. Orr, Rockford, Ill., assignor to Keystone Consolidated, Peoria, Ill.

Filed Sept. 10, 1971, Ser. No. 179,368
Int. Cl. E05c 1/06
U.S. Cl. 292—140 **9 Claims**



A dead bolt lock for use on the interior surface of a door for the entrance of a home or other building adapted for actuation by an exterior tumbler lock or an interior knob, where the dead bolt is projected into a strike or retracted into the lock housing. The lock assembly includes a dead bolt having a pair of rearwardly extending arms, a rotatable knob and a flat spring positioning the knob in either the projected or retracted position of the bolt. The knob includes an internal flange having a camming pin cooperating with a camming surface at the rear end of one bolt arm to reciprocate the bolt and a spaced blocking cam which is moved into a blocking notch formed in the other dead bolt arm when the bolt is projected.

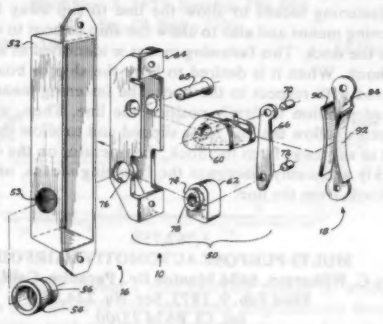
3,762,751
WINDOW LATCH

Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,112
Int. Cl. E05c 3/10
U.S. Cl. 292—196 **3 Claims**

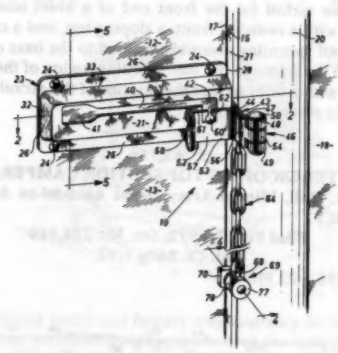
A latch for use in detachably interconnecting edge portions of a window and a window frame; the window being supported on the frame for swinging movement about a vertically disposed pivot axis away from a window closed position, wherein the edge portions are disposed in a closely adjacent facing relationship. The latch comprises a latching mechanism carried on the frame and a receiver carried by the window; the latching mechanism including handle operated means having a latch finger pivotally supported for movement within a plane disposed perpendicular to the edge portion of the frame between retracted and extended positions. The receiver defines a slot opening, which extends lengthwise of its as-

sociated edge portion and is adapted to receive the latch finger when the edge portions are disposed in facing relationship and the latch finger is pivoted into its extended position. When the window is in closed position, the latch mechanism



and the receiver are completely hidden from view in order to preserve the aesthetic appearance of the window; and unlatching movement of the latch finger, except by means of its handle operator, is positively prevented.

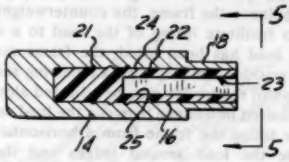
3,762,752
DOOR SECURITY DEVICE
David Frederic Saunders, 166 Cowan Ave., Toronto, Ontario, Canada
Filed Aug. 23, 1971, Ser. No. 173,743
Int. Cl. E05c *19/08*
U.S. Cl. 292—264 **28 Claims**



A door-locking device includes a chain which is anchored to a plate which is in turn screwed to the inside edge surface of the door frame jamb. A stud on the free end of the chain can be inserted into a slot in a door-plate screwed on the inside face of the door to provide a chain guard. An arm hinged on the outer end of the first plate can swing so that it abuts the door completely preventing it from opening. Aligned slots in the door plate and the arm receive the stud so as to lock the arm in its locking position.

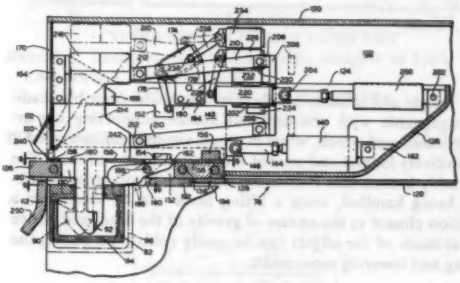
3,762,753
MOLDED BEARING FOR CAST DOOR LEVERS
Leon Yulkowski, Pontiac, Mich., assignor to Admiral Lock Company, Pontiac, Mich.
Filed Feb. 16, 1972, Ser. No. 226,764
Int. Cl. E05b *3/00*; F16b *2/20*; F16d *1/06*
U.S. Cl. 292—349 **9 Claims**

A handle construction, as for a door, wherein the handle is of the lever or knob type, preferably, with its hub formed with a socket for receiving a spindle of the door lock or door moving means; the hub having a molded member on its exterior and with a bearing liner which eliminates the normal sloppy fit



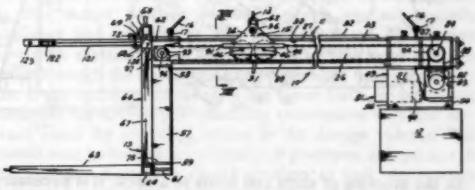
between the spindle and the handle hub and which provides a good and tight fit between the hub and the spindle, and/or between the handle bearing and rosette.

3,762,754
UNIVERSAL COUPLING MEANS FOR CONTAINER HANDLING
Wynand M. J. M. Goyarts, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.
Filed Sept. 13, 1971, Ser. No. 179,739
Int. Cl. B66c *1/10*
U.S. Cl. 294—67 R **13 Claims**



A universal coupling device in a cargo container spreader which is operable to engage in rigid locked relation a plurality of types of containers by means of a manipulatable variety of top-lifting coupling or latching mechanisms, including engaging container types having a variety of corner casting designs each of which requires a differently configured coupling. The couplings are so constructed that they are actuatable remotely by an operator to different positions in relation to one another as required to correctly engage the different container corner coupling receptacle types.

3,762,755
HOISTING ACCESSORY
Kolbjorn Saether, 221 N. LaSalle St., Chicago, Ill.
Filed June 21, 1971, Ser. No. 154,823
Int. Cl. B66c *1/00*
U.S. Cl. 294—67 AA **25 Claims**



An apparatus for use in hoisting heavy loads onto floors within an erected frame of a building by a lift line incorporates

an elongated frame mounted for longitudinal movement on a trolley and having a counterweight attached to one end portion thereof and a load supporting arrangement to the opposite end portion. The lift line is secured to the trolley, which is selectively positioned longitudinally along the elongated frame to balance the frame, the counterweight and the load, thereby to facilitate lifting of the load to a desired height. Once the load has been lifted, the frame may be laterally moved to position the load over a receiving surface, and then the position of the trolley may be adjusted along the frame to obtain a desired imbalance between the load and the counterweight for tilting the frame from a horizontal disposition to manipulate the load around ledges and the like and to facilitate the removal of the load from the load supporting device and onto the receiving surface.

3,762,756

HANDLING BEAM FOR HEAVY ELONGATE OBJECTS

Clyde C. Cole, 5298 Harvard St., Ventura, Calif.

Filed Apr. 10, 1972, Ser. No. 242,603

Int. Cl. B66c *1/66*

U.S. Cl. 294—81 R **2 Claims**

A simple and reliable missile handling beam assembly readily engageable with conventional missile supporting lug arrangements and which, when in place, visually indicates that it is positively locked and cannot inadvertently be released. The assembly is such that it does not impose any stress on the object being handled, since a lifting hook can be located in a position closest to the center of gravity of the load, and hence the attitude of the object can be easily controlled during the lifting and lowering movements.

3,762,757

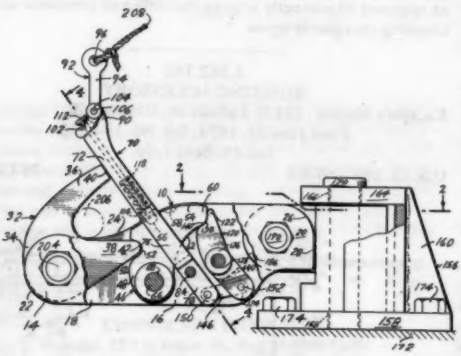
RELEASABLE HOOK

Irving Epstein, 4216 Shoreclub Dr., Mercer Island, Wash.

Filed Jan. 12, 1970, Ser. No. 2,086

Int. Cl. B63b *21/54*

U.S. Cl. 294—84 **12 Claims**



In the mooring of ships and boats to a dock, it is necessary to have a line run from the ship or boat to the dock. The line can be more or less tight and must be fixed so as to allow relatively little movement of the ship or boat with respect to the dock. Then, when it is necessary to allow the ship or boat to sail away from the dock, it is necessary to disengage the line from the fastening means on the dock. This invention relates to a fastening means whereby a line can be positioned to the fastening means for securing the ship or boat adjacent to the dock. Then, the person on the dock can mechanically actuate the fastening means to allow the line to slip away from the fastening means and also to allow the ship or boat to sail away from the dock. This fastening means is identified as a releasable hook. When it is desired to have the ship or boat fixedly secured with respect to the dock, the fastening means is in a locked position to firmly position the line. Then, when it is desired to allow the line to be slipped and to allow the ship or boat to sail away from the dock, the operator on the dock can quickly and easily disengage the fastening means, or releasable hook, from the line.

3,762,758

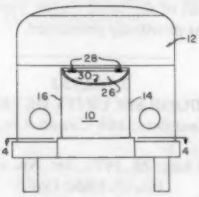
MULTI-PURPOSE AUTOMOTIVE AIRFOIL

Gary C. Wilkerson, 8486 Montna Dr., Paradise, Calif.

Filed Feb. 9, 1972, Ser. No. 224,871

Int. Cl. B62d *35/00*

U.S. Cl. 296—1 S **2 Claims**



A hollow airfoil for the front end of a blunt-nosed van is provided with a rounded front, a sloping top, and a contoured bumper and mounting assembly secured to the base of the airfoil and to the frame of the van. The sloping top of the airfoil is provided with a door so that the interior of the airfoil may also be used for storage and ballast.

3,762,759

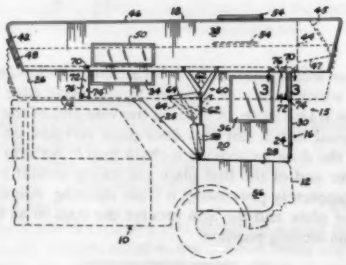
TELESCOPING TOP SECTION CAMPER

Joshua D. Hall, Miesau Army Depot Aezmmi-su APO, New York, N.Y.

Filed Feb. 7, 1972, Ser. No. 224,160

Int. Cl. B60p *3/32*

U.S. Cl. 296—23 MC **1 Claim**



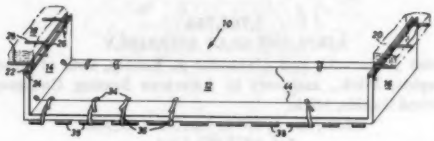
A camper body is provided with a rearward depending storage compartment which is fitted within the trunk area of a passenger vehicle. The portion of the camper body above the storage compartment projects laterally of the vehicle trunk area and forwardly over the roof surface of the vehicle. The camper body includes a top section which telescopically overlies the upper limit of a lower section and is raised and lowered by pressure cylinders supported by the lower section.

3,762,760

ROAD VEHICLES OF OPEN CONSTRUCTION

David John Martin Tomson, and John Francis Charles Sergeant, both of London, England, assignors to Whitbread & Company Limited, London, England

Filed Nov. 5, 1971, Ser. No. 196,058
Int. Cl. B60p 7/00
U.S. Cl. 296—100 14 Claims



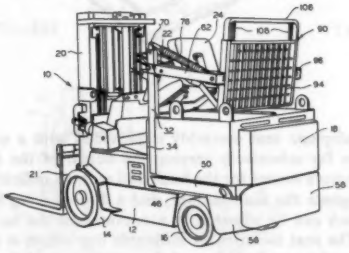
A road vehicle having a load carrying chassis to which is secured a first series of rods extending longitudinally thereof on both sides, each rod having mounted thereon for relative longitudinal movement a respective one of a series of webs. To cover the load, a sheeting is attached to a headboard of the vehicle and has a second series of webs secured thereto at intervals along its length, respective ones of the first and second series of webs being rapidly connectable and releasable by tongue and buckle devices.

3,762,761

LIFT TRUCK

Dennis E. Erickson, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 26, 1971, Ser. No. 137,370
Int. Cl. B60j 7/24
U.S. Cl. 296—107 18 Claims



An overhead guard and battery tray assembly for lift trucks in which the overhead guard extends over the operator's station and in upright side view is of a generally T-shaped configuration. The vertical leg on each side of the guard has a lower leg portion rigidly secured to the truck in the central portion thereof and an upper leg portion pivotally secured to the lower leg which supports one side of the guard canopy. The pair of upper leg portions are pivotable with the guard canopy both forwardly and rearwardly of vertical position. The guard assembly is secured to a truck body portion which includes a rearwardly extending battery tray or plate for supporting the battery of an electric lift truck on the chassis of the truck.

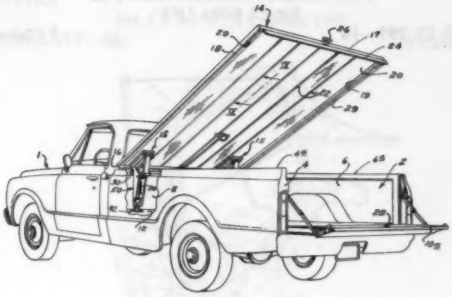
3,762,762

COVER AND LIFTING MECHANISM FOR PICK-UPS

Thomas E. Beveridge, P.O. Box 393, Hurst, Tex., and Stephen G. Andrle, 3132 S. Kingbury, Fort Worth, Tex.

Filed May 28, 1971, Ser. No. 148,067
Int. Cl. B60j 7/10
U.S. Cl. 296—137 B 13 Claims

Apparatus to detachably secure a cover over the load bed of a pickup truck comprising brackets having slots formed therein secured to upper and lower portions of the load bed, and stanchions having pins which slide into the slots to secure the stanchions to the brackets. The cover is pivoted to the upper ends of the stanchions such that the cover may be connected or removed from the vehicle by sliding the pins on the stanchions into or out of the slots in the brackets. An overcenter type linkage biases the cover to open and close positions.

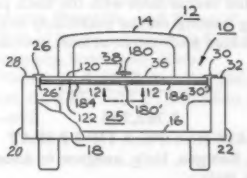


3,762,763

COVER FOR OPEN BED VEHICLES

Robert E. Deshores, San Pedro, Calif., assignor to Lock Top Corporation, Gardena, Calif.

Filed Nov. 22, 1971, Ser. No. 200,916
Int. Cl. B60j 7/10
U.S. Cl. 296—137 B 10 Claims

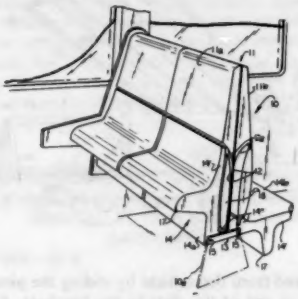


A detachable cover for open bed vehicles such as pickup trucks or the like. A pair of track means are coupled to the top of each of the truck sides and extend substantially the length of the bed from the cab of the vehicle to the tail gate. Each track means has an upper track and a lower track and transition slots therebetween. A forward planar rectangular panel is removeably mounted for sliding movement in the upper track and is positionable adjacent the cab and extends approximately half the distance from the cab to the tail gate. Means are provided to prevent the forward panel from passing through the slots to the lower track. The rear panel is also planar and rectangular and is removeably and slideably mounted in the track means. When the rear panel is in the upper track it extends from the rear edge of the forward panel to the tail gate. In this closed position, the two panels are substantially coplanar and coextensive with the bed of the vehicle and cover the storage area of the vehicle. The rear panel can also move through the transition slots between the upper track and the lower track and, moving in the lower track, to a position adjacent the cab and substantailly coextensive with the forward panel for providing access to the storage volume. The panels may be locked in a plurality of positions, at least one of the plurality being the closed position to lock the storage volume. Locking of the tail gate to the to the rear panel provides a locked storage volume. Gasketing in included to provide a substantially water tight engagement of the structure with the vehicle.

3,762,764
FOLDING SEAT FOR TRANSPORTATION TYPE VEHICLE

James G. McJunkin, Chula Vista, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Feb. 22, 1972, Ser. No. 227,783
Int. Cl. B60n *1/02*
U.S. Cl. 297—14 7 Claims

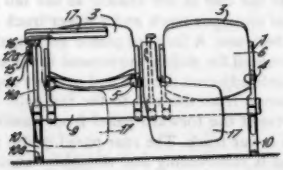


A folding seat, which becomes a semi-seat when folded, comprises a generally upright back member supported on a vehicle wall or floor, or both. Each back member has a recess in the lower portion thereof, and a folding seat member, having a projection on its under side, is hingedly mounted in the lower end of each recess. Each seat member swings between lowered, full seating position, and upswung, folded, semi-seating position. A lower back support member is carried by each seat member and rides within its associated back recess. When the seat member is swung down to full seating position the lower back support member associated therewith is moved thereby to close the recess flush with the back portion above the recess. Spring biasing means preferably urges each seat member toward folded position, or at least provides a counterbalancing effect.

3,762,765
CHAIR HAVING A TIP-UP SEAT

Giancarlo Piretti, Bologna, Italy, assignor to Anonima Castelli S.A.S., Bologna, Italy

Filed Apr. 4, 1972, Ser. No. 240,972
Int. Cl. A47b *39/00*
U.S. Cl. 297—162 6 Claims

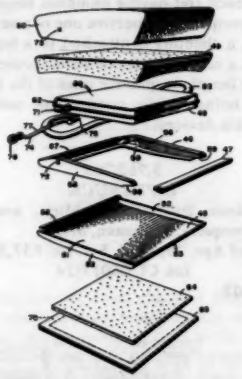


A chair having a tip-up seat and comprising two chair side members supporting therebetween a back rest and a tip-up seat, characterized by the fact that the chair side members each comprise a V-like body having two arms defining therebetween a throat facing upwards, with the rear arm of each V-like member being longer than the front one. The pair of rear arms support therebetween, in combination, a curved wall forming the back-rest inclined rearwardly, and each shorter arm of the V-like body at its free end is integral with a disc to which is removably connected a conical hollow body extending inwardly and forming in combination with the disc a casing, a housing hinge assembly enabling the seat to be supported and to be swung from its horizontal operative position to its upright inoperative position and vice versa, an assembly to automatically return the seat to its upright position, a spring suspension device for the seat and a stop limit device for defining the amplitude of the rotary movement of the seat. At the lower part of each chair side member, a recess is arranged and is adapted to engage the chair side on a longitudinal supporting beam and to fix it thereto by a suitable assembly. The beam, at least at its ends, is carried by strong legs each having enlarged resting feet.

3,762,766
AIRPLANE SEAT ASSEMBLY

Chester J. Barecki, and Alexander A. Karrip, both of Grand Rapids, Mich., assignors to American Seating Company, Grand Rapids, Mich.

Filed June 4, 1971, Ser. No. 149,946
Int. Cl. A47c *7/02*
U.S. Cl. 297—217 4 Claims



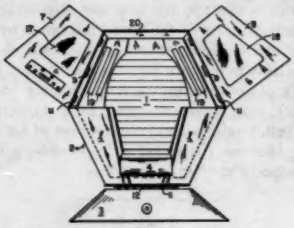
An airplane seat assembly is provided with a unique seat cushion for selectively varying the height of the seat, automatic return means for the back and seat, an indicating means to designate the seat number, and a disappearing headphone set which can be adjusted to accommodate the height of the user. The seat includes an inflatable bag which is interposed between the seat cushion and the seat base, and the inflatable bag includes a check valve which permits air to enter the bag but prevents the escape of air. The bag is filled with a resilient plastic material which expands the bag when the seat is not occupied to draw air into the bag through the check valve. When the seat is occupied, the valve can be opened to release a desired quantity of air to lower the level of the seat to accommodate the height of the user. The seat cushion is removably secured to the base to permit the withdrawal of the bag for use in emergencies. The seat is controlled by a constant rate torsional leaf spring so that it will raise when the occupant rises, and the back is hydraulically returned to the upright position when the seat is raised. The seat indicator includes an indica-carrying wheel rotatably mounted behind an opening in a panel mounted adjacent the headrest, and a spring urged plate engages flats on the wheel to releasably lock the wheel against rotation. When the seat designation is to be changed, the shaft on which the presser plate is mounted may be pushed against the urging of the spring to disengage the plate from the wheel to permit rotation thereof. The headphone set includes a plurality of telescopingly related tubes which are pivotally secured to each other. The tubes can be withdrawn from a channel or guide tube mounted in the back, and the extended tubes can be pivoted to position the earphone adjacent the ear of the user.

3,762,767

ENVIRONMENTAL CHAIR

Alfred J. Powell, 1316 Vance Ave., Coraopolis, Pa.

Filed Mar. 2, 1972, Ser. No. 231,242
Int. Cl. A47c 7/62
U.S. Cl. 297—217 9 Claims



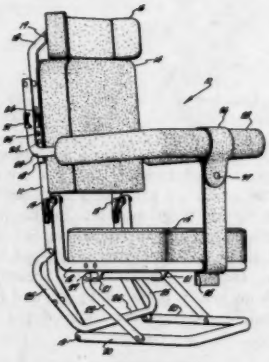
A controlled environment chair comprising a reclining seat substantially entirely enclosed within a shell about the seat. Opposite the backrest of the seat is an opening to permit access to the seat. Two portions of the shell adjacent the opening having inwardly directed sound speakers are hingedly attached to the shell such that they may be swung outward. The chair has over the shoulder reading lights and mood lights in the ceiling of the shell.

3,762,768

INFANT CAR SEAT

Richard E. Hyde, Palos Verdes Estates; Paul Vogler, Westminster; Dino Morelli, Lynwood, and Lee T. Carmichael, Pasadena, all of Calif., assignors to "Strolee" of California, a division of U.S. Industries, Inc., New York, N.Y.

Filed Sept. 13, 1971, Ser. No. 180,110
Int. Cl. A47d 1/10
U.S. Cl. 297—253 7 Claims



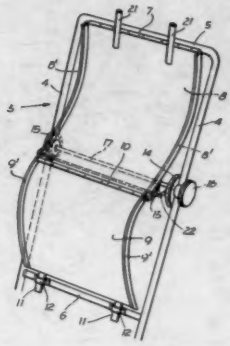
Described herein are infant car seats supplied with headrests and retentive armrests mutually simultaneously adjustable in height relative to the seat and seat frame of the car seat. Also described are infant's car seats which may be secured to adult seats with adult seatbelts without resort to the hook bars employed in prior art configurations. In a preferred embodiment of the latter configuration, the car seat is provided with a hook bar which can be swung into engagement with the under portion of an adult car seat or, where no space obtains between the adult seat back and adult seat, can be swung clear. By reason of its adjustability, the hook bar may also be employed with adult seating where the back extends below the level of the seat.

3,762,769

SEAT, ESPECIALLY FOR MOTOR VEHICLES

Gunter H. Poschl, Schwalkheim, Germany, assignor to Recaro AG, Glarus/Schweiz, Switzerland

Filed Dec. 16, 1971, Ser. No. 208,860
Claims priority, application Germany, Dec. 30, 1970, P 20 64 419.3
Int. Cl. A47c 7/14; B60n 1/06
U.S. Cl. 297—284 6 Claims



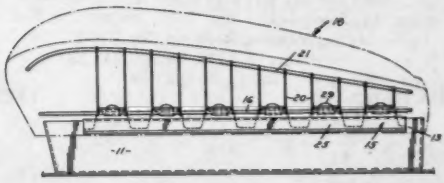
A seat for a motor vehicle, the back rest of which is adjustable to different substantially sinusoidal curvatures by turning a single hand wheel. If the back rest carries a head support, an adjustment of the shape of the back rest also causes the position of the head support to be shifted forwardly or rearwardly.

3,762,770

SEAT CONSTRUCTION

Anton W. Tedesco, Roseville, and Henry J. Tischler, Bloomfield Hills, both of Mich., assignors to Gulf & Western Metals Forming Company, Southfield, Mich.

Filed Sept. 5, 1972, Ser. No. 286,234
Int. Cl. A47c 7/02, 23/00; B60n 1/02
U.S. Cl. 297—452 31 Claims

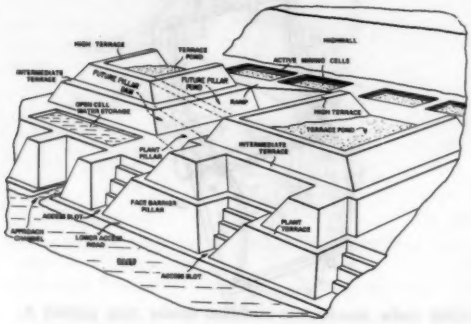


A seat construction comprising a frame and a spring assembly resiliently mounted on the base. The spring assembly comprises a pair of longitudinally extending wires and a plurality of transversely extending spaced spring wires having portions wound around the longitudinally extending wires to define an intermediate portion extending between the spaced longitudinally extending wires and connected thereto and free ends extending beyond the longitudinally extending wires at an acute angle to the intermediate portion. An additional longitudinally extending wire connects the free ends of said transversely extending spring wires along each said firstmentioned longitudinally extending wire. Means for supporting the spring assembly on a seat frame comprise strips of spring material each of which includes a base portion and a plurality of integral finger portions extending from said base, the finger portions being integrally connected to said base at one end and having a portion at the other end engaging one of said longitudinally extending wires.

3,762,771
MINE LAYOUT APPLICABLE TO NATURAL RESOURCES DEVELOPMENT

Clifton W. Livingston, 624 Panorama Dr., Grand Junction, Colo.

Division of Ser. No. 14,166, Feb. 25, 1970. This application Aug. 18, 1971, Ser. No. 172,710
Int. Cl. E21c *41/10*
U.S. Cl. 299—19 11 Claims

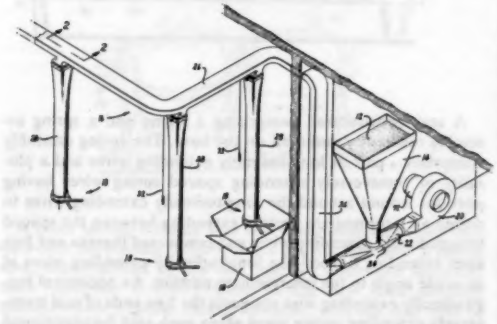


A mine layout applicable to natural resources development of a broad region, particularly applicable to the recovery of ore from oil shale and tar sands comprising a grid network of cellular units, such grid of cellular units being defined by pillars of the ore material and spaced below the ground level and of depths which vary from the upper surface of the ore to the lowermost depth of the ore body, adjacent cellular units of the grid lying at stepped depths and interconnected by a series of tunnels, certain of the cellular units being in various stages of active mining, certain other of the cellular units being filled to various degrees with overburden material and terrain being reestablished above such certain other cellular units by waste material produced by recovery of oil from the ore.

3,762,772
AIR CONVEYANCE SYSTEM AND CONTROL

Gunter G. Fuss, Daly City, Calif., assignor to Free-Flow Packaging Corporation, Redwood City, Calif.

Filed Apr. 12, 1972, Ser. No. 243,237
Int. Cl. B65g *53/04*
U.S. Cl. 302—28 15 Claims

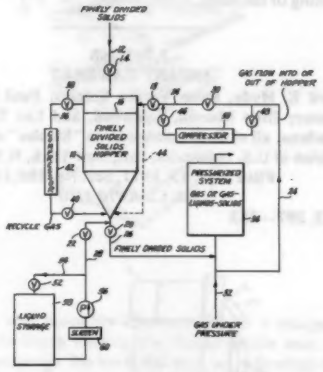


A system (method and apparatus) for effecting delivery of a predetermined quantity of lightweight subdivided material to a preselected distribution outlet in a pneumatic conveyance system having a plurality of distribution outlets or stations. The system operates in response to a demand signal from the preselected distribution outlet to initiate a timed sequence of operation of a conveyance blower, simultaneously with movement of flap means adjacent the preselected distribution outlet to divert the conveyance gas and entrained lightweight materials to said preselected distribution outlet. The flap means is held in diverted position by movement of a conveyance gas until such time as the timed blower sequence has been completed. The time period of operating the blower insures delivery of the desired quantity of the lightweight material to the preselected outlet. The control system also includes means to insure continuance of the timed blower sequence with respect to the selected distribution outlet and to prevent interruption of the timed sequence by operation of the control mechanisms at other distribution outlets. The system has utility in the intermittent distribution of subdivided materials (e.g., cushioning and packaging materials, dry cereals, etc.), only upon demand, to a particular filling or packaging outlet, with virtual elimination of blower noise except during the short interval of replenishing the supply at various localized distribution stations.

3,762,773
METHOD AND APPARATUS FOR FEEDING FINELY DIVIDED SOLIDS TO A PRESSURIZED GAS OR GAS-LIQUID-SOLIDS SYSTEM

Wilburn C. Schroeder, 7316 Radcliffe Dr., College Park, Md.

Filed June 30, 1972, Ser. No. 268,202
Int. Cl. B65g *53/16, 53/40*
U.S. Cl. 302—53 11 Claims



Finely divided solids are fed into a gas pressurized system from a gas pressurized hopper, the gas remaining in the hopper after the solids are exhausted is forced into the pressurized system by pumping liquid into the hopper to displace the gas, the liquid is withdrawn, the hopper is replenished with finely divided solids and repressurized by gas from the pressurized system. Means are provided for accomplishing these steps. There is no loss of pressurizing gas and no energy loss due to expansion and repressurizing of gas for the feed hopper.

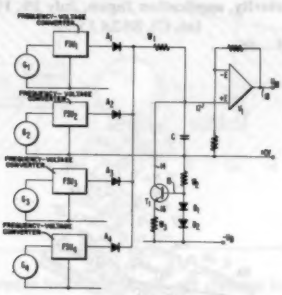
3,762,774
BRAKE FORCE CONTROL SYSTEM FOR VEHICLES ESPECIALLY MOTOR VEHICLES

Manfred H. Burckhardt, Waiblingen; Hellmut Krohn, Esslingen; Horst Grossner, Geradstetten, and Hans-Jorg Florus, Goppingen, all of Germany, assignors to Damiler-Benz Aktiengesellschaft, Stuggart-Unterturk-heim, Germany

Filed July 13, 1971, Ser. No. 162,110
Claims priority, application Germany, July 14, 1970, P 20 34 809.8
Int. Cl. B60t *8/08, 8/10*
U.S. Cl. 303—21 EB 10 Claims

A brake force control system for vehicles, especially for motor vehicles, in which a sensing device is coordinated to

each wheel for determining its rotating condition, whose signals influence the brakes when exceeding or falling below certain threshold values and when compared with a reference magnitude which is derived from the wheel rotating the fastest; a second reference magnitude of similar type replaces



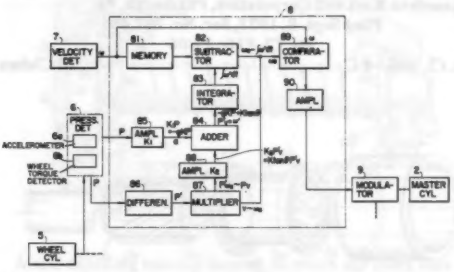
the first reference magnitude when the latter fails or drops below a predetermined value whereby the second reference magnitude proceeds according to a first differential quotient corresponding to a deceleration of the wheel equal to at least 1 g.

3,762,775

SKID CONTROL APPARATUS

Takeshi Ochiai, Toyota-shi, Aichi-ken, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed July 21, 1971, Ser. No. 164,672
Claims priority, application Japan, July 24, 1970, 45/64381
Int. Cl. B60t *8/10*
U.S. Cl. 303—21 P **29 Claims**



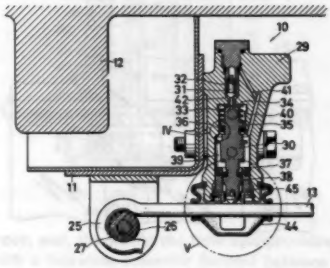
In the skid control apparatus disclosed a wheel velocity detector detects the velocity of a wheel on a vehicle that is being slowed down by application of a brake. A braking pressure detector detects the pressure created in a brake fluid in a brake line passing from a master cylinder to a brake cylinder. A control circuit establishes a predetermined or set wheel velocity from the vehicle's deceleration, the vehicle velocity, the rate at which the braking fluid pressure is increased, the gradient of the characteristic curve representing the relationship between the coefficient of friction of the road surface on which the vehicle travels and the wheel slip ratio. The control circuit then compares the set wheel velocity and the actually measured wheel velocity. When the actual wheel velocity is lower than the set wheel velocity, thereby indicating that the deceleration of the wheel has been more rapid than the set or desired deceleration, the control circuit issues a signal indicating excessive deceleration. A pressure regulator responds to this signal by decreasing the pressure of the braking fluid in accordance with this signal of the control circuit.

3,762,776

BRAKE PRESSURE REGULATOR

Tsuneo Kawabe, and Shinji Kawai, both of c/o Aisin Seiki Kabushiki Kaisha 1, Asachi-machi 2-chome, Kariya city, Japan

Filed Mar. 23, 1971, Ser. No. 127,247
Int. Cl. B60t *8/22*
U.S. Cl. 303—22 R **5 Claims**



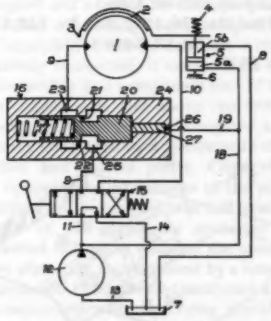
A hydraulic brake pressure regulator for varying the rear wheel brake hydraulic pressure in dependence upon changes of the vehicle load, wherein the pressure regulating operation is canceled in case of breakage of load sensing means whereby upon brake application the rear wheel brake cylinders are supplied with the same pressurized fluid as the front wheel brake cylinders.

3,762,777

DEVICE FOR CONTROLLING A WINCH PROVIDED WITH A SAFETY DEVICE

Rene F. Jacob, Lagny Le Sec (oise), France, assignor to Societe Anonyme: POCLAIN, Oise, France

Filed Mar. 8, 1972, Ser. No. 232,688
Claims priority, application France, Mar. 17, 1971, 7109417
Int. Cl. F16h *57/10*
U.S. Cl. 303—22 R **4 Claims**



This invention relates to the control of a winch connected to a hydraulic motor which comprises two conduits connected, the first to a source of pressurized fluid or to a discharge tank, the second to the tank or to the source, this control comprising a brake provided with a control member selectively connected by a third conduit to the source and to the tank. A calibrated valve is disposed on the conduit, downstream of the connection of the conduit to the delivery of the source.

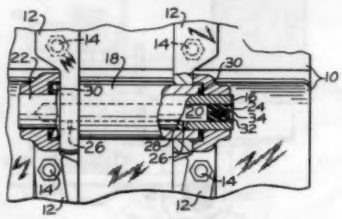
This control is suitable for being adapted to the circuit for adjusting the position of the hook of a crane.

3,762,778

TRACK PIN WITH VENTED RUBBER PLUG

Roger L. Boggs; David John Balzer, both of East Peoria, and Glenn Melvin Haslett, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 2, 1971, Ser. No. 130,664
Int. Cl. B62d 55/20
U.S. Cl. 305—14 9 Claims



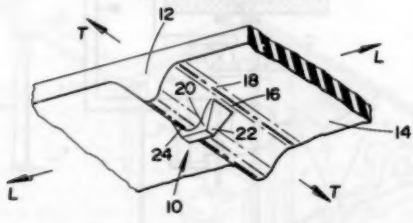
An improved method and apparatus are provided for sealing hollow pins which are commonly used as lubricant reservoirs in, e.g., track chain assemblies of crawler tractors, and linkage joints of earthmoving vehicles. One embodiment of the invention comprises a plug of elastomer material which has a lubricant passage axially therethrough, which passage receives an auxiliary plug means for the purpose of obturating the passage as well as causing radial expansion of the elastomer plug into positive engagement with a receiving axial bore in a hollow pin. The auxiliary expansion means takes the form of a screw, a spherical ball, or a headless plug employing a plurality of annular serrations. Another embodiment comprises a spherical ball which is received in a stepped, axial bore of a hollow pin and is retained therein by a Belleville washer. The invention facilitates refilling in the field of the lubricant reservoir contained within the pin.

3,762,779

TREAD ELEMENT FOR FLEXIBLE TRACK

Paul E. Russ, Sr., Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Mar. 26, 1971, Ser. No. 128,429
Int. Cl. B62d 55/24
U.S. Cl. 305—35 EB 8 Claims



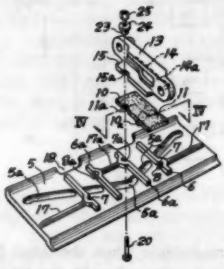
An improved tread element for endless flat track of the polymeric type having transverse ribs that form a tread pattern on the outer surface of the track. The tread element forms a nubbin or "button-like" protuberance extending away from or below the ribs. A plurality of upraised protuberances extend away from the tread ribs of the track, and define a plurality of surfaces which enhance transverse and longitudinal traction.

3,762,780

BUFFER MEANS BETWEEN LINK AND SHOE PLATE IN A CRAWLER-TYPE APPARATUS

Kazuhiro Tomizawa, 523 Kamagaya, Kamagaya-cho, Higashikatsushika-gun, Chiba, Japan

Filed May 25, 1971, Ser. No. 146,723
Claims priority, application Japan, July 29, 1970, 45/75446
Int. Cl. B62d 55/28
U.S. Cl. 305—46 4 Claims



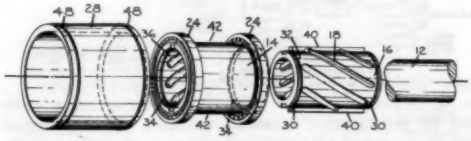
Resilient buffer means connected between the links and shoe plate in crawler-type apparatus to absorb shock and vibration. Tractive force increasing members are mounted on the shoe plate adjacent the links and in contact therewith for increasing the tractive forces applied to the shoe plate from the links and for retaining the resilient buffer means and links against longitudinal movement relative to the shoe plate.

3,762,781

ANTI-FRICTION BALL BEARING ASSEMBLY

Maurice Irving Zeldman, Pittsburgh, Pa., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Sept. 8, 1972, Ser. No. 287,461
Int. Cl. F16c 29/06
U.S. Cl. 308—6 C 10 Claims



An anti-friction linear ball bearing assembly adapted for mounting on a shaft to provide omnidirectional load capability between the shaft and a support member, comprising an outer sleeve and an inner sleeve concentrically fitting within the outer sleeve, the inner sleeve having a helical track defining a helical path for the circulation of a number of load carrying balls between said shaft and the bearing assembly, means attaching the ball bearing assembly to the support member.

3,762,782

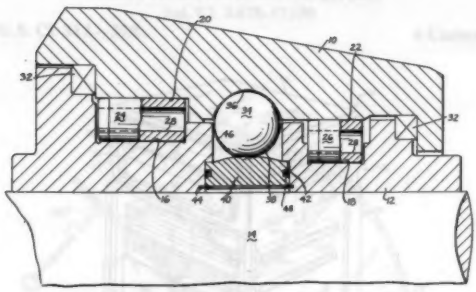
BEARING ARRANGEMENT FOR ROLLING CUTTER

John H. Rumbarger, Wayne, Pa., assignor to Subterranean Tools Inc., Beaumont, Tex.

Filed May 17, 1971, Ser. No. 144,122
Int. Cl. F16c 19/49, 27/04, 33/58
U.S. Cl. 308—8.2 3 Claims

The specification discloses an excavating tool in the form of a rolling cutter in which a tubular outer body is mounted on an

inner journal or core member and bearings are provided between the core member and the body in the form of axially spaced roller bearings and a row of balls between the roller



bearings. The races for the balls are not circular in cross section, but are formed to a lesser curvature than the balls and engage the balls on opposite sides of the central radial plane of the row of balls.

3,762,783

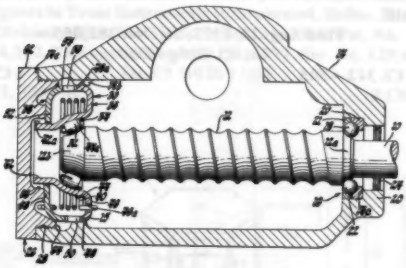
SELF-ADJUSTING TAKE-UP BEARING

Charles N. Hay, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 15, 1972, Ser. No. 263,156

Int. Cl. F16c *35/04*

U.S. Cl. 308—207 **4 Claims**



A self-adjusting take-up bearing in which the outer race for the bearing has a cam face thereon which engages the cam face of a mating cam, cam thrust being developed by a torsion spring which forces the mating cam surfaces to rotate relative to each other in a separating direction to develop proper bearing preload.

3,762,784

ROLLER ASSEMBLY

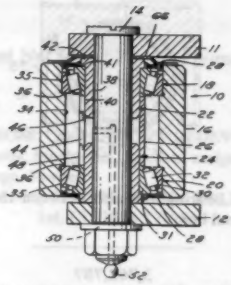
Martin Pachuta, Allen Park, Mich., assignor to Jervis B. Webb Company, Detroit, Mich.

Filed June 19, 1972, Ser. No. 264,380

Int. Cl. F16c *43/04*

U.S. Cl. 308—207 **10 Claims**

A roller assembly consisting of a roller element rotatably mounted on a pair of tapered roller bearings, each bearing being in turn supported on one of a pair of bearing retainers held in axially spaced assembled relationship by a spacer member which also defines a minimum axial separation between the inner, or cone elements of the roller bearings so that the roller assembly can be securely mounted on an axle passing through the bearing retainers without effecting a proper clearance adjustment of the roller bearings. The spacer is made as a longitudinally slotted tube and is expanded in assembly into gripping engagement with cylindrical surfaces on the pair of bearing retainers, which surfaces also support the



bearing cones; and, the slot in the tube also provides communication with a lubricant reservoir formed between the tube and the inner diameter of the roller element and extending between the pair of roller bearings.

3,762,785

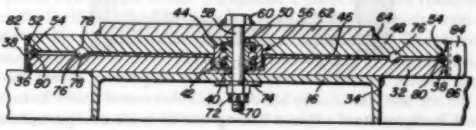
WHEEL SUPPORTED TURNTABLE FOR TRAILERS AND THE LIKE

Cordell C. Light, Rt. 1, Box 265, Amarillo, Tex.

Filed Sept. 8, 1971, Ser. No. 178,618

Int. Cl. F16c *33/74*

U.S. Cl. 308—230 **5 Claims**



A load supporting and handling turntable expresly but not necessarily designed and adapted for use between the leading wheel-equipped load supporting and steering end of a trailer and the wheel-equipped truck or carriage with which the trailer is operatively connected. It comprises a first circular plate fixedly connectible to a component part of the carriage, a second plate aligned with and above the first plate, said second plate being provided with an elongated adapter plate and being centrally connected by a spindle with the axial portions of the first and second plates. Concentric annular grooves in the opposed inward surfaces of the plates accommodate anti-friction ball bearings. These ball bearings and the opposed surfaces of the plates are protected by an appropriately mounted O-ring. In addition the outer peripheral edges of the two plates are encompassed by a loose fitting but appropriately mounted band which constitutes a dust guard. This band in conjunction with the O-ring provides effective protection for the vulnerable surfaces between the first and second plates.

3,762,786

ENGINE BEARING ARRANGEMENT

John M. Bailey, Dunlap, and Alan W. Wells, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

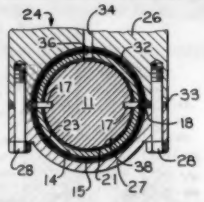
Filed Dec. 23, 1971, Ser. No. 211,284

Int. Cl. F16c *9/02*

U.S. Cl. 308—237 **5 Claims**

A split bearing is mounted on the journal of a crankshaft by pin means which permit the bearing to move radially, but

prevents it from rotating relative to the journal. Lubrication means is provided for communicating lubricating oil between



the journal and bearing and also between the bearing and a supporting journal box.

3,762,787

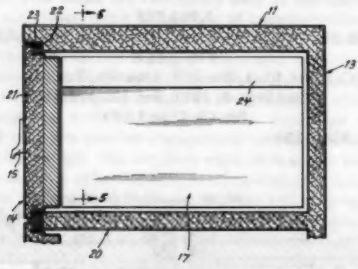
INSULATED ARTICLE STORAGE UNIT

Fred H. Grubb, Marietta, Ohio, assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 17, 1971, Ser. No. 181,306

Int. Cl. A47b *81/00*; F25d *11/00*

U.S. Cl. 312—214 **4 Claims**



A heat resistant cabinet having one or more compartments for storing articles. Each compartment comprises a rectangular container having a hermetically sealable cover. The containers are each individually supported by a conventional file drawer suspension mechanism for movement into and out of corresponding bays in the cabinet casing. One or more cells are formed in the container walls. A particulate mixture having heat absorbing characteristics is contained in such cells and thus the filled portion of each cell serves as a heat sink under conditions where the unit is exposed to intense external heat. By using filler materials having a high heat of fusion the temperature in the inner container is temporarily stabilized when the melting point of the substance employed is exceeded. At least one conductive plate is mounted within each cell in contact with the filler to aid in the transfer of heat thereto.

3,762,788

CONVERTIBLE CONTAINER PUPPET THEATRE

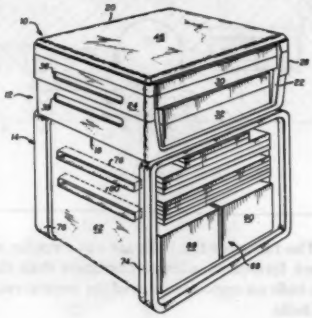
Aaron Heller, 23 W. 68 St., New York, N.Y.

Filed May 8, 1972, Ser. No. 251,275

Int. Cl. A47b *85/00*; F16b *12/00*

U.S. Cl. 312—240 **7 Claims**

A carrying case or storage container is adapted to be converted into a puppet stage, such as for stick puppets. The case comprises a first storage compartment having a closed bottom, an open top, and two pair of opposed peripheral side walls. The top is closed by a removable cover when the case is utilized as a storage container and also serves as a base for mounting the stage therein when the container is utilized as a puppet stage. Slots are contained in a pair of closed side walls which enable the manipulation of stick puppets therethrough when the container is converted to a puppet stage. One side wall of the other pair of side walls has an opening therein to substantially the full extent thereof for removably receiving at least one slidable drawer therethrough when the container is utilized as a storage container and for receiving scenery



therethrough when the container is converted to a puppet stage. The storage container preferably includes a pair of nesting compartments, one of these compartments being convertible into the puppet stage while both of these compartments may be utilized for storage.

3,762,789

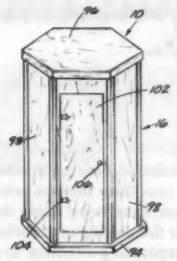
BURGLER PROOF GUN APPARATUS

Kenneth P. Robertson, 1332 S. Eastman Ave., Los Angeles, Calif.

Filed Aug. 22, 1972, Ser. No. 282,855

Int. Cl. E05g *1/00*

U.S. Cl. 312—305 **6 Claims**

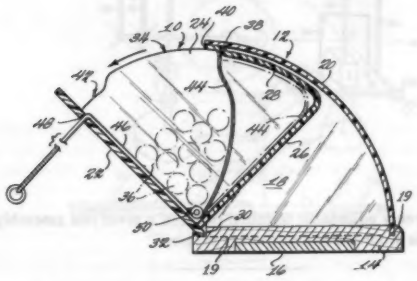


A substantially cylindrical cylinder having a longitudinally extending narrow opening through which guns may be inserted and removed. The cylinder is bolted to the floor and within the cylinder, there is a rotatably mounted gun rack having a plurality of longitudinally extending compartments in which guns may be placed. The compartments being provided at the bottom with gun support means. The steel cylinder is closed at the top and there is a door for the longitudinally extending opening, the door being provided with one or more locks. There is a cabinet enclosing the cylinder and gun rack. The cabinet has a door with locks and the cabinet is secured to the floor by any suitable means. The gun rack is also provided with a lock or locking means whereby it may be locked against rotation and an empty gun compartment is locked in register with the opening in the cylinder.

3,762,790
COTTON DISPENSER

Peyton Sidney Neuwirth, c/o Knolls Professional Building, 114 Stratford Dr., Peoria, Ill.

Filed Feb. 25, 1972, Ser. No. 229,401
Int. Cl. A47b *88/00*
U.S. Cl. 312—328 6 Claims

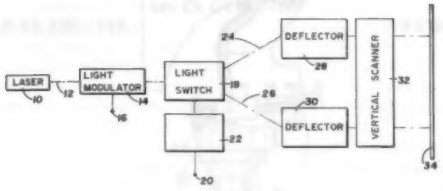


A dentist's cotton roll dispenser comprising a tiltable transparent bin pivoted for swinging movement into and out of a transparent casing. The rear walls of the bin and the casing are arcuate and closely spaced to prevent cotton rolls from wedging between them. A flexible liner in the bottom of the bin can be raised by means of a drawstring so as to move the cotton rolls toward the forward part of the bin.

3,762,791
LIGHT BEAM DEFLECTION

Gerald R. Fournier, and Charles E. Baker, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 758,259, Dec. 31, 1968, Pat. No. 3,614,312. This application Mar. 30, 1971, Ser. No. 129,627
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 13 Claims



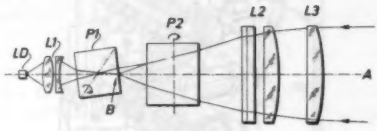
A light beam is deflected into a pattern represented by a synthesized sawtooth waveform by means of a light switch and a triangular wave generator. In a video display application, a light switch directs an intensity modulated light beam along one of two paths. When directed along either path, the modulated light beam is incident upon one or the other of a mirror pair. One mirror of the pair reflects a light beam incident thereon from along a first path to the second mirror for reflection therefrom in a pattern approximated by a triangular wave, and the second mirror of the pair reflects a light beam incident thereon from along the second path to the first mirror for reflection therefrom in a pattern approximated by a triangular wave displaced 180° from the first pattern. To generate the approximated triangular waves, the first mirror of the pair oscillates at a frequency ω to deflect a light beam incident thereon in a pattern represented by the expression (sin ωt) and the second pair oscillates at a frequency 3 ω to deflect a light beam incident thereon in a pattern represented by the expression (sin 3 ωt), where ω equals the fundamental frequency. The mirrors oscillate in a manner such that the individual patterns produced are optically added. To generate the sawtooth function, only the positive going portion of the triangular wave is selected and the resultant scan patterns are interlaced on the screen.

3,762,792
Patent Not Issued For This Number

3,762,793
OPTICAL COMPENSATION DEVICE

Stig Leopold Ullstig, Stockholm, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed May 24, 1972, Ser. No. 256,302
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 8 Claims

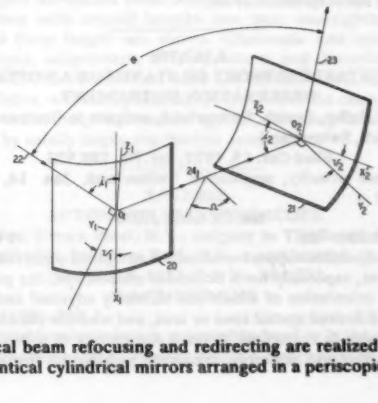


An optical compensation device precompensates optical aberrations which are not rotational-symmetrical but symmetrical in relation to two or more perpendicular, possibly equiangularly turned planes through the optical axis. Such aberrations develop in optical systems in which an optical image is being scanned in two dimensions by means of two or more prisms which during the scanning operation rotate around axes perpendicular to each other and to the optical axis. At least two cylinder lenses the axes of which coincide with the optical axis, which lenses are spaced a short distance relative to the focal length of the lenses and which are positioned symmetrically relative to the plane of symmetry of the aberrative images or one or more pairs of perpendicularly crossed lenses, both lenses in one pair having the same refractive power, the axes of which lenses coincide with the optical axis and are mutually spaced a short distance relative to the focal length of the lenses, effect the precompensation operation. One or more rotational-symmetrical lenses generate arbitrary refractive power and corrects rotational-symmetrical aberrations of the image.

3,762,794
ADJUSTABLE BEAM REFOCUSER AND REDIRECTOR

Jacques Alexis Arnaud, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 887,262, Dec. 22, 1969, abandoned. This application Apr. 6, 1972, Ser. No. 241,516
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 4 Claims



Optical beam refocusing and redirecting are realized using two identical cylindrical mirrors arranged in a periscopic con-

figuration. The focal length of the system and the deflection angle can be made continuously and independently variable by relating the parameters of the system in a specified manner.

3,762,795

OBSERVATION INSTRUMENT WITH PANORAMIC VISION

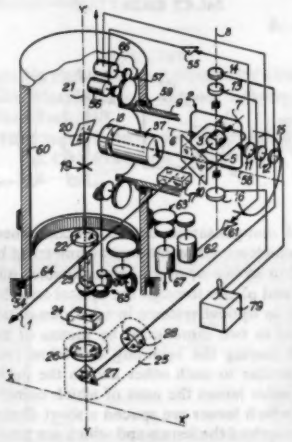
Maurice Bezu, Croissy, France, assignor to Societe d'Etudes & de Realisations Electroniques, Ashieres, France

Filed June 14, 1971, Ser. No. 152,890

Claims priority, application France, July 1, 1970, 7024400

Int. Cl. G02b *23/08*

U.S. Cl. 350—16 **14 Claims**



An observation instrument with panoramic vision, stabilized by a gyroscopic system having inner and outer gimbals which provide corresponding rotation axes, capable of providing accurate data on the elevation and azimuth angles of the boresight and having a fixed eyepiece, characterized by the fact that its optics include two mirrors referenced to the gyroscopic system, to wit a first front plane mirror fixed directly to the inner gimbal of said gyroscopic system, set at a fixed incidence angle, having a plane parallel to the outer gimbal axis of the gyroscopic system and inclined at 45° to the inner gimbal axis of said system, and a second plane mirror referenced to the relative motion of the gyroscopic system about its outer gimbal axis, the plane of said second mirror being so disposed that it furnishes an image of said inner gimbal axis coaxially with an axis about which maximum deflection is obtained for the boresight, and a selective magnification lens system arranged between said mirrors.

3,762,796

ADJUSTABLE SUPPORT OR STAND FOR AN OPTICAL OBSERVATION INSTRUMENT

Rudolf Heller, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

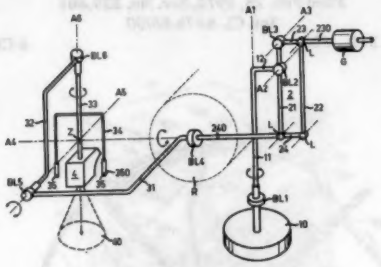
Filed Oct. 13, 1971, Ser. No. 188,933

Claims priority, application Switzerland, Jan. 14, 1971, 531/71

Int. Cl. G02b *23/16*

U.S. Cl. 350—85 **9 Claims**

An adjustable support or stand for an optical observation instrument, especially for a binocular microscope, the position and/or orientation of which can be freely adjusted and fixed within a desired spatial zone or area, and wherein the observation device is connected through the agency of a three-axes full Cardan rod assembly, rendering possible its freely combined rotational movement about three axial directions perpendicular to one another by means of a handgrip, at a spatially freely adjustable terminal piece of a pivot rod assembly, which is mounted at a stationary support.



3,762,797

ADJUSTABLE SUPPORT FOR OPTICAL OBSERVATION INSTRUMENT

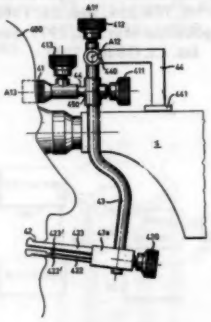
Rudolf Heller, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Continuation-in-part of Ser. No. 188,933, Oct. 13, 1971. This application May 25, 1972, Ser. No. 256,813

Claims priority, application Switzerland, Jan. 14, 1971, 531/71; July 9, 1971, 10099/71

Int. Cl. G02b *23/16*

U.S. Cl. 350—85 **3 Claims**



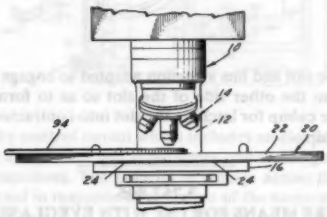
An adjustable stand for an optical observation instrument, especially for a binocular microscope, the position and/or orientation of which can be adjusted and fixed in a spatial area. A three-axis full Cardan rod assembly connects the observation instrument with a freely adjustable terminal piece of a pivot rod assembly. The Cardan rod assembly and the pivot rod assembly incorporating a number of bearing means each providing single-axis pivot joints, and each of said bearing means is formed of relatively frictionless roller body bearings. Each of the number of roller body bearings incorporating a respective electrically operable blocking mechanism which can be selectively electrically switched-in and switched-out in such a manner that the observation instrument can be selectively fixed and adjusted, respectively, in each desired orientational position. Operating means render possible a freely combined rotational movement of the three-axis full Cardan rod assembly about three axial directions which are perpendicular to one another, said operating means comprising a forehead support and a mouthpiece by means of which the electrical blocking mechanisms can be selectively released or fixed.

3,762,798

MICROSCOPE STAGE

John J. Grubb, La Habra, and Keichi Tomei, Monterey Park, both of Calif., assignors to Hamilton Company, Whittier, Calif.

Filed July 1, 1971, Ser. No. 158,960
Int. Cl. G02b 21/26
U.S. Cl. 350—86 2 Claims



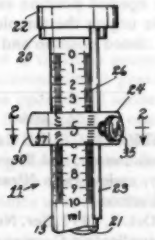
A supplementary microscope stage for attachment to a microscope table on which a specimen plate for a plurality of annularly-arranged and spaced specimens or samples for microscopic examination is rotatably mounted. The supplementary stage has at least one upstanding pivot pin on which the specimen plate is rotatably disposed. The pivot pin is adjustable to various positions from a normal position to bring various parts of the respective specimens or samples into view by the lens of the microscope.

3,762,799

MAGNIFYING INDICATOR FOR A BURETTE

Justin Joel Shapiro, 1802 Second St., Berkeley, Calif.

Filed Aug. 27, 1971, Ser. No. 175,640
Int. Cl. G02b 27/36
U.S. Cl. 350—116 9 Claims



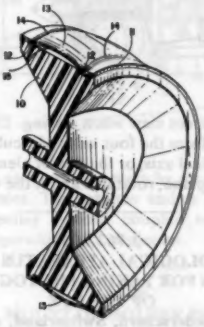
A magnifying scale indicator for a burette wherein the indicator is adjustably mounted on a depending rod extending parallel to the scale on the burette. The indicator consists of an arcuate transparent lens bar which is a segment of an annular ring. The indicator lens bar has paired fiducial lines on opposite sides thereof and can be adjusted toward and away from the burette to vary the magnification of the burette scale. The paired fiducial lines permits this variable magnification without parallax error.

3,762,800

OPTICAL-TRANSFER BAND FOR READING EMBOSSED CHARACTERS

Gust A. Olson, Los Angeles, and Doyle E. Wilcox, Hacienda, both of Calif., assignors to North American Rockwell Corporation, El Segunda, Calif.

Filed Oct. 2, 1972, Ser. No. 294,402
Int. Cl. G02f 1/30
U.S. Cl. 350—160 R 4 Claims



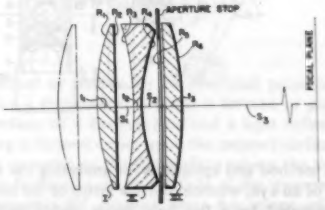
An improved optical-transfer band for use in a system for reading embossed characters. The optical-transfer band is fitted over the periphery of an optical disc, the edges of the band grip the optical disc tightly to excluse dust and maintain the proper spacing between the band and the optical disc at all times.

3,762,801

COMPACT THREE COMPONENT OBJECTIVE LENSES

James G. Baker, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Substitute for Ser. No. 53,042, July 8, 1970, abandoned. This application Feb. 24, 1972, Ser. No. 229,135
Int. Cl. G02b 3/04, 9/16
U.S. Cl. 350—189 34 Claims



Compact air-spaced three component photographic objective lenses with overall lengths less than one-eighth their nominal focal length are shown. Chromatic and spherical aberrations, astigmatism, field curvature, and distortion are corrected. The Petzval sum does not exceed 0.300, and the total relative refractivity exceeds 35 percent of the central element's refractivity. In certain species, focusing is accomplished by axially displacing the first component.

3,762,802

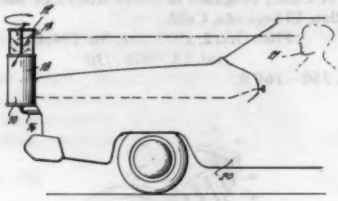
AUTOMOBILE VIEWING SCOPE

Levi Allen, Crown Point, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Oct. 5, 1971, Ser. No. 186,732
Int. Cl. G02b 5/08
U.S. Cl. 350—307 1 Claim

A rotatable mirror device mounted in front or in the rear of an automobile so as to give the driver a direct view of other-

wise blind areas to his immediate right or left, and for particular viewing use in parking operations and in driving out of blind driveways. The device is retractable so as not to interfere



with the normal direct view when driving. The mirrors may be mounted so as to form the four sides of a cube which is rotatable about the vertical axis, or the mirror element may be in the form of a vertical plane, rotatable about the vertical axis.

3,762,803

OPHTHALMOLOGICAL APPARATUS WITH A SLIT ILLUMINATION FOR TAKING PHOTOGRAPHIC VIEWS OF THE EYE

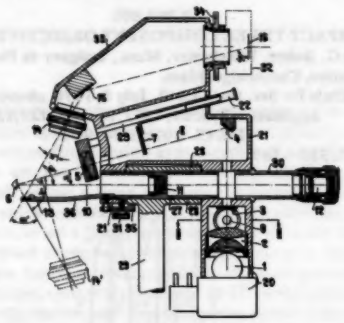
Franz Papritz, Niederscherli, Switzerland, assignor to Haag-Street A.G., Liebefeld-Berne, Switzerland

Continuation of Ser. No. 37,670, May 15, 1970, abandoned, which is a division of Ser. No. 599,851, Dec. 7, 1966, Pat. No. 3,519,338. This application Mar. 10, 1972, Ser. No. 233,727

Claims priority, application Switzerland, Dec. 15, 1965, 17305/65

Int. Cl. A61b *3/10, 3/14*

U.S. Cl. 351—7 **3 Claims**



A method and apparatus for analyzing the shape of the cornea of an eye, wherein narrow strips of the cornea surface are illuminated by a flat light beam and a picture of the illuminated profile of the illuminated profile of the cornea is taken by means of a camera of which the objective is perpendicular to the light beam, different profiles being taken by rotating said light beam and camera to different angular positions for succeeding exposures.

3,762,804

EYEGLASS FRAME HAVING SPLIT RIMS AND DETACHABLE SIDE PIECES

Konstantin Livas, Gerlingen, Germany, assignor to Nufer-Optik Neostyle Walter A. Nufer, Gerlingen, Germany

Filed Aug. 28, 1972, Ser. No. 284,459

Claims priority, application Germany, Aug. 28, 1971, G 71 32 959.4

Int. Cl. G02c *1/08, 5/14*

U.S. Cl. 351—90 **5 Claims**

A eyeglass frame having lens-encompassing rims including slot in their outer portions facilitating insertion and removal of lenses. Bores extend through the rims on both sides of the slot adapted to receive fasteners mounted on a clamp hingedly supporting side pieces for the frame, and imparting a closing force to the slot. A pivotable closing lever is mounted on one

side of the slot and has a portion adapted to engage a recess in the rim on the other side of the slot so as to form a further releasable calmp for latching the slot into contracted or closed relationship.

3,762,805

PRESSURE MEANS FOR USE WITH EYEGLASS FRAMES

Thomas J. Lyons, Sr., 1232 Superior Ave., Pittsburgh, Pa.

Continuation of Ser. No. 816,220, April 15, 1969, Pat. No. 3,654,376. This application Sept. 8, 1971, Ser. No. 178,564

Int. Cl. G02c *5/16*

U.S. Cl. 351—113 **8 Claims**

Pressure means for use in combination with eyeglass frames including a frame front, a pair of temples, and hinge means connecting said temples to said frame front, comprise a body member shaped to fit snugly and removably over at least one of the temples and surrounding at least a portion thereof, elongated resilient means supported by the body member on the outward side thereof and of the temple and extending forwardly thereof. The resilient means are shaped in avoidance of the adjacent front corner of the temple to bearingly engage the adjacent end portion of the frame front only when the temple is near its fully opened position such that pressure is exerted on the temple urging the temple from its fully opened position toward its closed position and against the head of the user.

3,762,806

MOTION PICTURE CAMERA

Johann Roth, Schwabhausen, and Werner Grimm, Emmering, both of Germany, assignors to Niezoldi & Kramer GmbH, Munich-Allach, Germany

Filed Oct. 1, 1971, Ser. No. 188,708

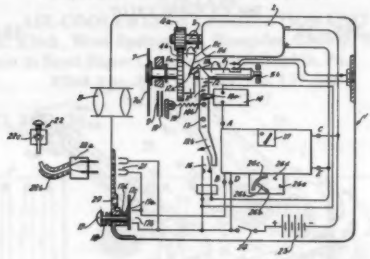
Claims priority, application Germany, Oct. 1, 1970, P 20 48 317.4

Int. Cl. G03b *17/46*

U.S. Cl. 352—121 **21 Claims**

A motion picture camera which can be set to make a single exposure in response to each actuation of the camera release, a series of time lapse exposures at desired intervals, or a series of exposures at predetermined intervals. The shutter of the camera is rotatable by a drive which is controlled by a blocking lever. The latter can be moved from a drive-blocking position in response to energization of an electromagnet which is energized on actuation of the camera release and remains energized (when the camera is set to make single ex-

posures or time lapse exposures) for intervals which are shorter than the interval required to complete a single revolution of the shutter. The deenergization of electromagnet is



regulated by control circuit which includes an electronic timer employing a capacitor and three series-connected galvanically coupled transistors. The polarity of voltage across the capacitor is reversed in response to actuation of the camera release.

3,762,807

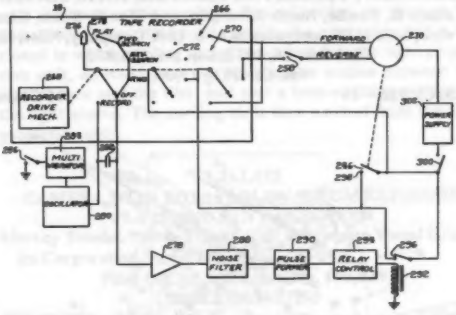
FILMSTRIP PROJECTOR WITH SYNCHRONIZED SOUND

Frank C. Badalich, Chicago, and Roy H. Watterlohn, Morton Grove, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 97,859, Dec. 14, 1970, Pat. No. 3,675,994. This application Jan. 13, 1972, Ser. No. 221,461

Int. Cl. G03b *31/04*

U.S. Cl. 352—17 **6 Claims**



A control circuit for a filmstrip projector provided with synchronized audio accompaniment provided by a recorder having several selective operational modes. A switch is connected to the recorder for changing its operational modes and is connected to the film drive motor. The switch provides a play position for driving the motor in a forward direction for advancing the film through the projector and a rewind position for reversing the motor to rewind the film to its start position.

3,762,808

DATA REPRODUCTION APPARATUS

Arthur Sandmeier, 78 Chemin de la Caille, Neuchatel, Switzerland

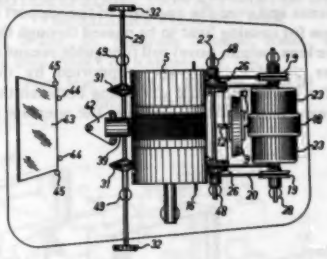
Filed May 17, 1971, Ser. No. 144,001

Claims priority, application Great Britain, May 22, 1970, 24,909/70

Int. Cl. G03b *23/10, 21/06*

U.S. Cl. 353—27 **13 Claims**

A film projector having its own screen and an enclosed optical system for projecting images from a predetermined area onto the screen. A cylinder is provided onto whose surface a strip of microfilm having information images is mounted. A desired information image is brought to a predetermined area



for projection by said optical system by rotating and/or axially moving the cylinder. The rotation and/or axial movement is achieved with pulley systems coupled to dials which are available to the operator of the projector.

3,762,809

ORIGINAL MOUNT OR HOLDER FOR OPTICAL PROJECTION SYSTEM

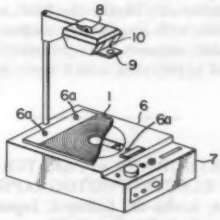
Saburo Kato, Koto-ku, Tokyo, and Hideo Sawada, Sagamihara-shi, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1970, Ser. No. 102,788

Claims priority, application Japan, Jan. 7, 1970, 45/2125; Jan. 7, 1970, 45/2126

Int. Cl. G03b *21/06, 21/28, 31/06*

U.S. Cl. 353—66 **6 Claims**



An original mount or holder for an overhead projector is provided in which a transparent original is formed or placed upon the flat surface of a Fresnal lens and a light reflecting surface or coating is formed either upon the stepped surface of the Fresnel lens opposite to the flat surface where the transparent original is formed or on the surface of the transparent original not engaging the Fresnel lens. An image of the original may be projected upon a screen by a projection lens which directs light beams that have been reflected by the reflecting surface or coating and passed undiffracted through the flat interface between the transparent original and the Fresnel lens achieving a sharper, brighter image.

3,762,810

FILM VIEWER

William C. Kinsinger, New York; James Ippolito, Bronx, and Vincent Pisarri, Scarsdale, all of N.Y., assignors to Metagraphic Systems, Inc., New York, N.Y.

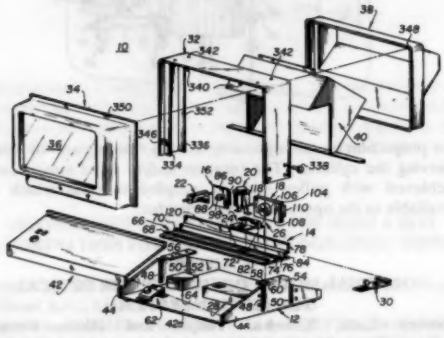
Continuation-in-part of Ser. No. 884,260, Dec. 11, 1969, Pat. No. 3,672,756. This application Dec. 9, 1970, Ser. No. 96,415

Int. Cl. G03b *21/12*

U.S. Cl. 353—68 **54 Claims**

A film viewer is disclosed which includes a base; a multifunction support member secured to the base, with the support member having an aperture therethrough; first means

removably secured to the support member for supporting and dispensing roll film mounted thereon; second means removably secured to the support member for taking up the roll film dispensed by the first means; a lens system removably secured to the support member intermediate the first and second means and over the aperture of the support member; a light system for causing light to be passed through the aperture toward the lens system; novel roll film guide means and retaining means therefor removably supported by the support member for guiding roll film advancing between the first and second means in a path of travel over the aperture in the support member; and motive means removably secured to the support member for operating the first and second means. In addition to the above functions, the support member further functions to align all components and to slidably support a plate film carriage by which the film viewer can be used for viewing microfilm in either card or plate formats. The base supports and aligns a generally U-shaped frame of the viewer which in turn removably carries the front and rear cover sections of the viewer with a reflecting module therebetween. In addition, the base supports the aforementioned light system which in of itself is provided with a novel heat sink construction.

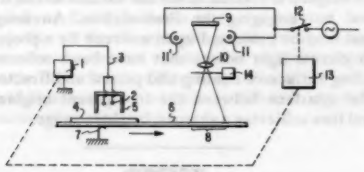


3,762,811

METHOD AND APPARATUS FOR ELECTROPHOTOGRAPHY

Seiji Matsumoto, Asaka-shi, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 23, 1971, Ser. No. 165,466
Claims priority, application Japan, July 25, 1970, 45/64737
Int. Cl. G03g *15/04*
U.S. Cl. 355—3 **7 Claims**



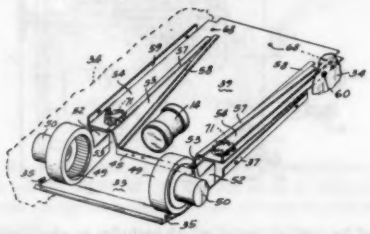
In an electrophotographic method in which an electrophotostatic latent image is obtained by uniformly charging and imagewise exposing an electrophotosensitive material and letting toner stick to the material according to the electrostatic latent image thereon, the electrophotographic method characterized in that the uniform charge on the electrophotosensitive material is varied according to the desirable contrast of the image to be obtained, and the exposure is controlled according to the surface potential, thereby obtaining a controlled contrast.

3,762,812

COPY MACHINE COOLING AND DRYING SYSTEM

David F. Wolff, 21 W. 474 22nd St., Glen Ellyn, Ill., and Raymond J. Harke, 5505 Potomac Ave., Chicago, Ill.

Filed June 19, 1972, Ser. No. 263,857
Int. Cl. G03g *13/10*
U.S. Cl. 355—10 **18 Claims**



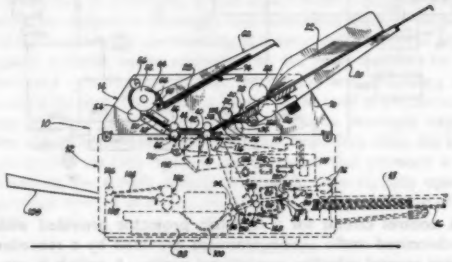
A copy machine cooling and drying system includes blower means mounted in the scanning chamber of a copy machine and operative to drive air from the chamber into a duct defined along a light tunnel wall and discharging in drying relation onto copy sheets after emergence from liquid developer. A balanced dual blower system is provided. Heretofore wasted tunnel space is utilized in the duct for transferring the air from the blowers to discharge from the duct. Such discharge is through an especially efficient arrangement of distribution ports. At least part of the duct structure provides copy sheet directing means. Start-up booster heating is provided.

3,762,813

DOCUMENT FEEDER FOR ELECTROSTATIC COPIER

Wallace R. Fowlie, North Riverside, and Moo S. Yoon, Glenview, both of Ill., assignors to A. B. Dick Company, Niles, Ill.

Filed Feb. 16, 1972, Ser. No. 226,872
Int. Cl. G03g *15/00*
U.S. Cl. 355—14 **16 Claims**



A copy machine including means for transporting an original to an exposure location, means for directing an image of the content of the original to a copying location and means for transporting individual copy sheets to the copying location. Switch means are provided for detecting the leading and trailing edges of the original and copy sheets with the sequence of operations being controlled by the condition of these switch means whereby maximum efficiency from the standpoint of feeding of originals and copy sheets can be accomplished. Engagement of switches with leading edges of the originals and copy sheets cooperates with a "ready" position provided for the originals whereby the copy sheets and originals can be moved in synchronism through the respective exposure and copying locations. The mechanisms are arranged so that both originals and copy sheets are obtained in page number sequence after completion of a continuous multiple copy operation whereby restacking of originals or copy sheets to conform to the initial stack of originals is not

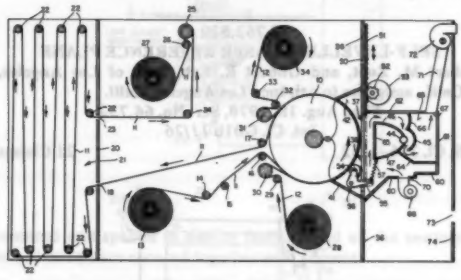
required. The withdrawal means for moving the originals from the exposure location are designed to achieve the proper restacking.

3,762,814

AIR-COOLED LIGHT PROJECTION UNIT

Paul E. Kitch, West Springfield, Hampden County, Mass., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Apr. 26, 1971, Ser. No. 137,316
Int. Cl. G03b 27/52
U.S. Cl. 355—30 **2 Claims**



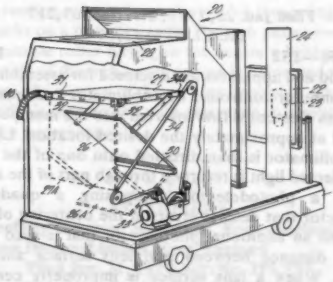
An air-cooled light projection unit for use in apparatus in which film is exposed to light, such as apparatus for projecting or duplicating film images. A heat-radiating light source is enclosed in a housing from which light is projected toward a film located at an illumination station. Walls within the housing define a tortuous cooling passageway through the housing. The passageway extends first past the illumination station between the film and the light source and secondly past a heat radiating portion of said light source. Blowers are associated with the housing for causing a flow of cooling air through the passageway. A method performed by the projection unit is disclosed in which cooling air is introduced into the light projection unit, directed past the illumination station between the light source and the film, and past a heat-emitting portion of the light source. The cooling air is then emitted from the light projection unit.

3,762,815

CAMERA WITH ROTATABLE VACUUM EXPOSURE PLATE AND BEN DAY SCREEN

Murray Friedel, North Miami, Fla., assignor to Visual Graphics Corporation, New York, N.Y.

Filed Oct. 18, 1971, Ser. No. 190,039
Int. Cl. G03b 27/60
U.S. Cl. 355—73 **6 Claims**



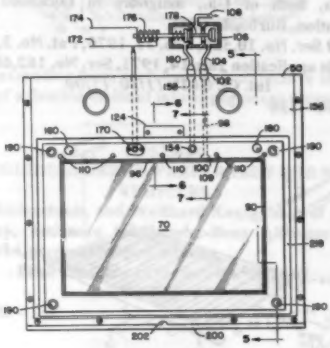
A light sensitive sheet is carried upon a vacuum platen within a camera. The platen is rotatably mounted on two trunions and swingable into either one of two positions for receiving direct or reflected focused light from a camera lens, The platen may also be rotated about a median axis for image reversal. Means are provided for the application or removal of a sheet of Ben Day material carried upon the camera platen without interrupting the vacuum.

3,762,816

PHOTOREPRODUCTION APPARATUS WITH AUXILIARY FILM HOLDER

Joseph H. Wally, Jr., Shawnee Mission, Kans., assignor to Western Blue Print Co., Kansas City, Mo.

Filed Mar. 31, 1972, Ser. No. 240,124
Int. Cl. G03b 27/60
U.S. Cl. 355—73 **41 Claims**



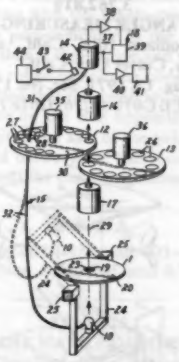
Photoreproduction apparatus having a principal vacuum film platen and one or more auxiliary vacuum film platens which may be removably mounted thereover.

3,762,817

SPECTRAL DENSITOMETER

Lanny L. Harklau, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Feb. 23, 1972, Ser. No. 228,641
Int. Cl. G01n 21/00; G01j 3/48
U.S. Cl. 356—73 **14 Claims**



Absolute optical density measurements in the reflection mode as well as the transmission mode are possible with the single beam spectral densitometer. The light source is movable at a fixed radius about a point located centrally of an aperture provided in a support on which a specimen to be investigated is placed, making it possible to use the same light source for the transmission and reflection mode. With the light source as described, the calibration obtained with the light source positioned for the transmission mode is valid for the reflection mode. Provision is made to correct for any changes in the photomultiplier tube and the light source of the densitometer by measuring the output of the photomultiplier when applying the light source to the photomultiplier tube via

fiber optics and several different interference filters. A light emitting diode provides a source of light which before each output measurement is directed to the photomultiplier tube to minimize hysteresis and space charge effects. A series of interference filters covering the optical spectrum are used when making density measurements. These are mounted on a first filter wheel. Separate neutral density filters which are mounted on a second filter wheel are used for calibration.

3,762,818

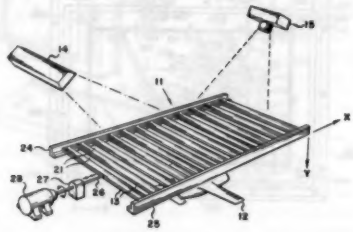
CONTOUR MEASUREMENT APPARATUS

Winston O. Johnson, Atlanta, and Donald M. Meadows, Marietta, both of Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Division of Ser. No. 10,520, Feb. 11, 1970, Pat. No. 3,627,427. This application July 14, 1971, Ser. No. 162,686

Int. Cl. G01b *11/30, 11/00*

U.S. Cl. 356—120 8 Claims



A technique for measuring the contour of a surface by generating a pattern of optical interference between a periodic shadow pattern cast onto the surface and a periodic reference pattern. Translating the shadow pattern and the reference pattern at least one complete cycle of spatial frequency causes the average intensity of the shadow pattern, the reference grid pattern, and various extraneous optical noise images to be minimized or cancelled, so that only contour lines accurately describing the contour of the surface remain on the surface to be viewed or photographed.

3,762,819

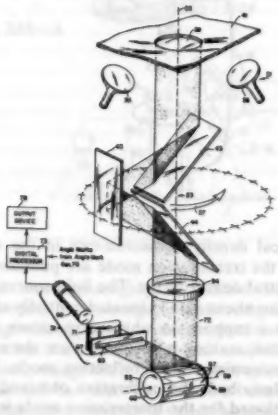
OPTICAL ANGLE MEASURING SYSTEM

Jon H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 12, 1971, Ser. No. 171,083

Int. Cl. G01b *11/26;* G01c *1/00*

U.S. Cl. 356—138 16 Claims



An optical system is disclosed for automatically measuring corner angles of graphic patterns. In a preferred embodiment, the image of a graphic pattern is illuminated by a light source, slowly rotated by a rotating K-mirror assembly and rapidly scanned by a rotating mirror drum which sequentially projects predetermined incremental portions of the graphic pattern through a slit into a light sensor for detection. An angle mark generator is utilized to generate angle marks as the K-mirror assembly rotates. A very steep transient pulse or wavefront is generated by the light sensor whenever either edge of the corner angle of the pattern is parallel to the slit. A digital processor is responsive to the steep transient pulses and the angle marks for detecting the angular difference, during one revolution of the image, between consecutive appearances of two steep transient pulses.

3,762,820

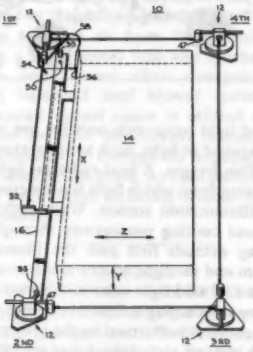
SELF-LEVELLING LASER REFERENCE PLANE

Robert M. Zoot, and Gilbert E. Erb, both of Los Angeles, Calif., assignors to Ati, Inc., Los Angeles, Calif.

Filed Aug. 18, 1970, Ser. No. 64,732

Int. Cl. G01b *11/26*

U.S. Cl. 356—152 21 Claims



Apparatus for establishing a horizontal self-correcting plane using light from a laser or other optical source to establish a geometric form whose plane is normal to the gravitational vector. The apparatus maintains the reference plane horizontal, regardless of supporting surface shifts or other displacements.

3,762,821

LENS ASSEMBLY

John Henry Bruning, Millburn, and Donald Richard Herriott, Morris City., both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

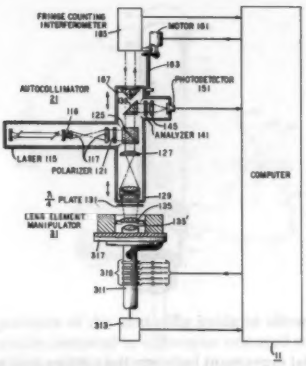
Filed Jan. 25, 1971, Ser. No. 109,217

Int. Cl. B29d *11/00*

U.S. Cl. 356—152 13 Claims

A method and apparatus are disclosed for assembling lenses using a computer-controlled autocollimator and lens manipulator. A lens element is first inserted into the manipulator and positioned at approximately the desired location. Light from the autocollimator is than directed onto one of the lens surfaces. Reflected light is returned through part of the autocollimator to a photodetector comprising a quadrant-type photodetector that detects errors in the centering of the lens surface and an additional photosensor that is used to determine the distance between said lens surface and a fixed reference. When a lens surface is improperly centered or spaced, the computer generates error correction signals that are fed to the lens manipulator to correct the centering or spacing of the lens surface. After the first surface of a lens is centered, the centering of its second surface is accomplished in a similar fashion. However, in this case the lens is manipu-

lated so that the first surface also remains aligned while the second surface is being aligned. Succeeding lens elements are



centered and spaced in similar fashion, and all the centered lens elements are secured together with cement.

3,762,822

OPTICALLY INSPECTING THE POSITION AND SIZE OF MAGNETIC STRIPES ON A MOVABLE WEB

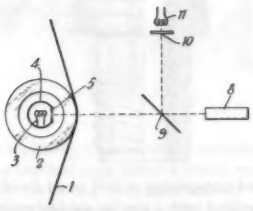
Eric Alfred Harvey, and Peter Edward Marter, both of Ilford, England, assignors to Ilford Limited, Ilford, England

Filed July 13, 1972, Ser. No. 271,620

Claims priority, application Great Britain, Aug. 2, 1971, 36181/71

Int. Cl. G 01n *21/18*

U.S. Cl. 356—199 **10 Claims**



This invention relates to an device for inspecting the location of marks on a travelling web. The web passes over a translucent rotatable roller having in the centre a light source. On the other side of the web a microscope is so located that an enlarged view of a portion of the web is observable. The location of the marks is determined with reference to a reticle viewed through the microscope.

3,762,823

STATIONERY

Frank Geoffrey Gregson, Maidstone, Kent, England, assignor to Caxton Designs Limited, Kent, England

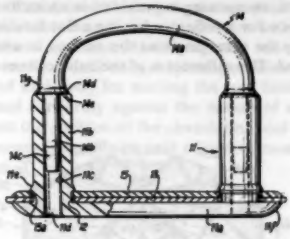
Filed Jan. 21, 1972, Ser. No. 219,757

Claims priority, application Great Britain, Jan. 21, 1971, 2,841/71; Apr. 24, 1971, 11,255/71

Int. Cl. B42f *3/04*

U.S. Cl. 402—47 **10 Claims**

A stud arrangement for use in the attachment of sheet material to a base or cover in the preparation of a stationery pad or binder, comprises a base part and two spaced stud



members extending from such base part to receive the respective ends of a flexible element into engagement therewith.

3,762,824

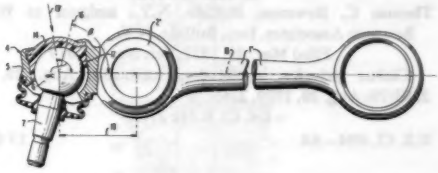
CROSS GUIDE MEMBER, PREFERABLY FOR MOTOR VEHICLES

Einhard Kleinschmit, and Wolfhard Konig, both of Stuttgart, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterburkheim, Germany

Filed Sept. 23, 1971, Ser. No. 183,167

Int. Cl. F16c *11/06*

U.S. Cl. 403—133 **5 Claims**



A cross guide member, joint lever, tie-rod or the like, preferably for motor vehicle, which includes at least one eye in a guide member for a pivotal connection and a guide joint adjacent the eye for a ball whose joint bolt, in the center position of the ball, forms with the longitudinal axis of the guide member in a plane perpendicular to the axis of the eye, an angle that is larger than a right angle and which is retained in the guide joint by a rolled-in housing cover; the guide joint is thereby so constructed that the assembly and rolling direction of the housing cover on the side opposite the ball joint bolt, forms with the longitudinal axis of the guide member a larger angle than is formed between the ball joint bolt axis, when in its center position, and the same longitudinal axis.

ERRATA

For Classes 403—156 and 403—341 see:
Patents Nos. 3,762,748 and 3,762,749

3,762,825

TRAFFIC LANE MARKER AND REFLECTOR

Hans E. Reusser, Cleveland, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

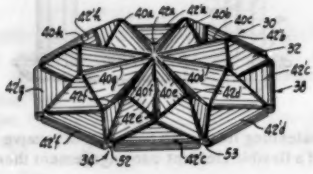
Filed May 27, 1971, Ser. No. 147,525

Int. Cl. E01f *11/00*

U.S. Cl. 404—16 **17 Claims**

A marker for indicating traffic lanes on a roadway, in the form of a vault-like metal stamping with a generally flat base comprised of peripherally spaced, inwardly bent, tabs that underlie only a portion of an upper surface of the marker. The upper surface is continuous, with alternate, generally radially extending, ridges and depressions. A preferred configuration of the upper surface has flat horizontal portions at base level, spaced between the ridges at the periphery of the marker, forming a part of the depressions. The ridges incline steeply

upward and inward from the periphery and extend generally parallel to the base at the central part of the marker. In one embodiment, an opening is provided in an inclined face of the upper surface for a reflector having a flat face inclined at approximately the same angle as the surface in which the opening is formed. The reflector is of the cube-corner type in which



a plane common to the cube corners is perpendicular to the cube-corner axes and angularly related to the front face of the reflector. The plane of the cube corners is located substantially behind the front face, recessed from the opening, and a major portion of the cube-corner pattern extends the full width of the opening in the upper surface of the marker.

3,762,826

SEALING STRIP

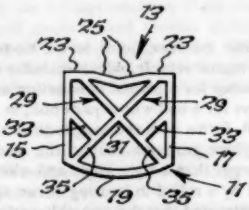
Thomas C. Bowman, Buffalo, N.Y., assignor to Watson-Bowman Associates, Inc., Buffalo, N.Y.

Filed Mar. 25, 1971, Ser. No. 128,019

Claims priority, application Australia, Aug. 20, 1970, 2263/70; Aug. 20, 1970, 2265/70

Int. Cl. E 01c *11/10*

U.S. Cl. 404—64 17 Claims



An elongated, tubular, sealing strip or member of resilient, flexible elastomeric material such as neoprene is provided with a top wall having a central portion formed as a V with a wide angle between the arms, and a pair of main reinforcing webs extending longitudinally within said tubular strip and respectively extending diagonally from the top wall of said strip adjacent one side edge thereof to the bottom wall of the strip adjacent the opposite side wall of the strip. Said reinforcing webs intersect and are joined together substantially at the intersection of an imaginary vertical plane equidistant from the side walls and an imaginary horizontal plane cutting the side walls at approximately their midpoints. Additional supplementary, reinforcing webs extend diagonally from approximately the midpoints of the side walls normal to the lower portions of the main webs.

3,762,827

VARIABLE DWELL CONTROL ATTACHMENT

Harold R. Ziegelmeyer, Medford, Conn., assignor to McDonnell Douglas Corporation

Filed July 27, 1972, Ser. No. 275,708

Int. Cl. B23b *47/24*

U.S. Cl. 408—14 6 Claims

An attachment for an automatic feed material cutting machine to cause the cutting tool to dwell at the end of its axial feed stroke before retraction, thereby improving the interior finish of the cut surface. Relatively slidable members having an adjustable stop means mounted thereon, allows

relative axial movement between the cutting tool and the positive feed power source.

3,762,828

DRILL WITH GUIDE DEVICE

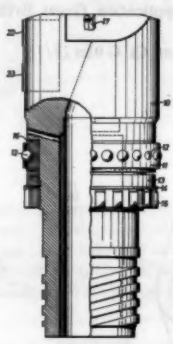
Kurt Heinrich Albert Erich Faber, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Sept. 7, 1971, Ser. No. 178,187

Claims priority, application Sweden, Sept. 29, 1970, 13185/70

Int. Cl. B23b *51/00*

U.S. Cl. 408—83 1 Claim



A drilling tool comprising a drill head fixed to a rotatable drill shaft is provided with a special guide device consisting essentially of roller bodies (balls or rollers) retained in bearing rings positioned on the drill shaft adjacent to the drill head. The position of the roller bodies can be adjusted so that they bear with selected pressure against the surface of a drill hole thereby plastically working such surface.

3,762,829

ADJUSTABLE TOOL GUIDE AND SUPPORT

Mahmut Yilmaz, 1582 Oak St., Evanston, Ill.

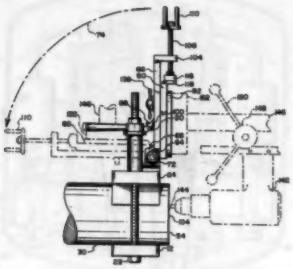
Filed Oct. 20, 1971, Ser. No. 190,795

Int. Cl. B23b *45/14*

U.S. Cl. 408—105 5 Claims

An adjustable support and centering guide is disclosed for clamping a working tool to the end of a large diameter work piece or shaft so that the tool can be manipulated and secured at a desired or central position against an end surface thereof. In one embodiment a clamp and seat are provided to affix a hinged paramagnetic support member upon the end of a shaft for use with an electromagnetic drill chuck tool. The paramagnetic support member is pivotally mounted to initially bring the tool against the end of the shaft and slidably mounted for reciprocation upon both vertical and lateral axes by the seat in

order to accurately locate the tool in relation to the end surface. A pair of easily manipulated cam locking pins maintain



the upright position of the centering guide to allow the working tool to remain centered or otherwise oriented with respect to the shaft and do work thereon.

3,762,830

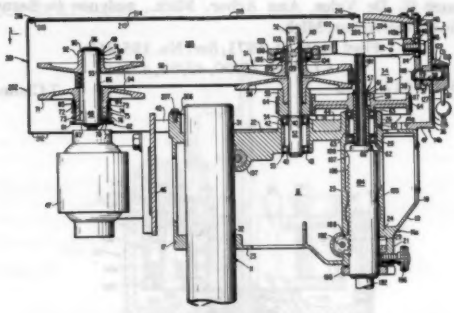
DRILL PRESS

David D. Pettigrew, Clearwater, Fla., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.

Division of Ser. No. 157,949, June 29, 1971, Pat. No. 3,718,405. This application Oct. 24, 1972, Ser. No. 300,150

Int. Cl. B23b *47/00, 47/18*

U.S. Cl. 408—135 1 Claim



A drill press including a tool spindle mounted in a quill assembly having a toothed rack thereon which cooperates with a drive pinion to move the quill and spindle up and down. Retainer means on the upper end of the quill includes a relief notch terminating in a retainer lug which prevents the quill from inadvertently being driven downwardly past the drive pinion.

3,762,831

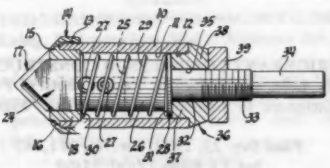
SELF-CENTERING CHAMFER TOOL

Joseph M. Nicholson, 27840 Southpointe, Grosse Ile, Mich.

Filed May 4, 1971, Ser. No. 140,042

Int. Cl. B23b *27/16, 51/10*

U.S. Cl. 408—146 3 Claims



A self-centering chamfer tool having a cylindrical body, a conically shaped nosepiece adaptor detachably mounted on the front end of the body and provided with a tool slot, a tool holder bar mounted in said body, a chamfering tool carried on the front end of said tool holder bar and adapted to be positioned in said slot for chamfering engagement with a bore in a workpiece, means for normally biasing said tool holder bar and tool rearwardly in said body, adjusting means mounted on the rear end of said body for moving the tool holder bar and chamfering tool forwardly against the action of said biasing means to adjust the position of the chamfering tool in said slot, and locking means for retaining said adjusting means in an adjusted position.

3,762,832

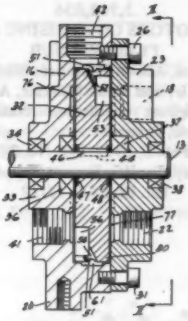
CENTRIFUGAL PUMP

Max E. Franck, Waterloo, Iowa; Harry F. Heisler, deceased, late of Sumner, Iowa, and by Juliette R. Converse, executrix, Sumner, Iowa, assignor to Heisler Manufacturing Company, Waterloo, Iowa

Filed Mar. 6, 1972, Ser. No. 231,811

Int. Cl. F01d *3/02*

U.S. Cl. 415—98 8 Claims



A centrifugal pump comprising a pump housing in which an impeller is rotatably supported and wherein the impeller is formed with recesses on opposite side faces which are offset from the axis of rotation of the impeller a substantial distance relative to the radius of the impeller so that fluid received from the input ports of the pump will be subjected to substantial centrifugal force resulting in a pump of high efficiency. The recesses formed in the impeller are fluidly connected to an output groove formed about the periphery of the impeller and the housing which mates with output ports.

3,762,833

INLET STRUCTURE FOR TURBOMACHINE

Arthur J. Miller, Irwin, and Robert A. Miller, Jeannette, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

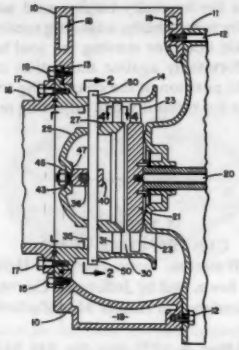
Filed June 6, 1972, Ser. No. 260,235

Int. Cl. F01d *25/24, 9/02*

U.S. Cl. 415—136 5 Claims

The fluid turbomachine is provided with an inlet gas flow diffuser tube. The nose piece of the turbomachine is mounted within the inlet diffuser tube, in concentrically spaced relation thereto, by a pair of supporting bars extending transversely through the nose piece, the ends of the bars being affixed to the diffuser tube. The diffuser tube, in conjunction with the noise piece, provides an annular passage for the inflow of gas to the turbine wheel journaled inwardly of the nose piece. The nose piece is provided with integral nozzle blades positioned

in the annular gas flow passage. A bar retaining means engages the nose piece supporting bars in their central area and is



operable to deflect the bars and maintain the same in tight engagement with the nose piece.

3,762,834

HELICOPTER ROTORS COMPRISING A REINFORCED PLASTICS HUB

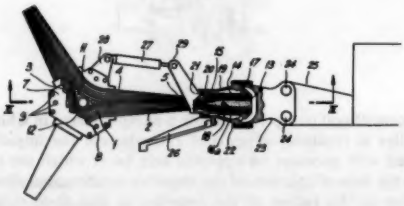
Gaston Bourquardez, Aix-en-Provence; Michel Jean Yves Gouzien, Bouc Bel Air, and Rene Mercier, Aix-en-Provence, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Feb. 2, 1972, Ser. No. 222,871

Claims priority, application France, Feb. 15, 1971, 7104967

Int. Cl. B64c *11/12*

U.S. Cl. 416—134 **10 Claims**



A helicopter rotor has a reinforced plastics hub. Arms extend radially outwardly from the hub each arm carrying through, the intermediary of a sleeve, a blade. The arms are reinforced with fibres.

3,762,835

FOREIGN OBJECT DAMAGE PROTECTION FOR COMPRESSOR BLADES AND OTHER STRUCTURES AND RELATED METHODS

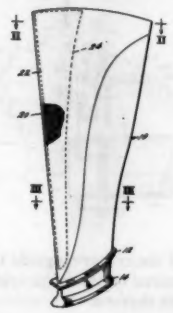
Robert G. Carlson, Greenhills; Joseph H. Crawford, Cincinnati; Edward R. Farmer, Reading; Guy C. Murphy, Fairfield, and Charles T. Salemme, Maderia, all of Ohio, assignors to General Electric Company

Filed July 2, 1971, Ser. No. 159,111

Int. Cl. F01d *5/28*

U.S. Cl. 416—224 **5 Claims**

A filament composite compressor blade is provided with a fine wire mesh subsurface layer around its leading edge. This subsurface layer is clad with nickel. Internal mesh layers are also incorporated in the blade adjacent its leading edge. The wire mesh provides protection against impact damage by large and small foreign objects such as stones and sand. Where the subsurface mesh layer is bonded in place by a non-conductive adhesive, the adhesive in the interstices of the mesh is coated with silver and the nickel is atomically bonded to the nubs of



the mesh. Also described is a novel method of incorporating the internal mesh layers in a blade formed from laminates of filament/matrix material.

3,762,836

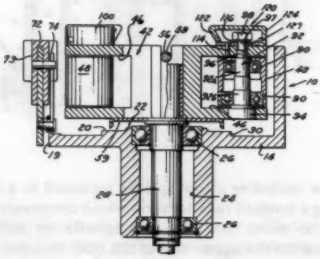
PERISTALTIC PUMP CONSTRUCTION

James H. De Vries, Ann Arbor, Mich., assignor to Sarns, Inc., Ann Arbor, Mich.

Filed Sept. 30, 1971, Ser. No. 185,263

Int. Cl. F04b *19/00, 43/08, 45/06*

U.S. Cl. 417—238 **7 Claims**



A peristaltic pump assembly utilizing a housing with a circular inner wall and a rotor for progressively squeezing a tube lying against the wall, and the provision of a multiple capacity assembly which permits the use of optional walls selectively usable with corresponding rotors for each wall. A tube guide for clasping the ingress and egress ends of the tube is provided also to adapt to different size tubes which will be used with the optional wall units.

3,762,837

REFRIGERANT COMPRESSOR CONSTRUCTION

Charles B. Ellis, and Sidney A. Parker, both of Fort Worth, Tex., assignors to Lennox Industries Inc., Marshalltown, Iowa

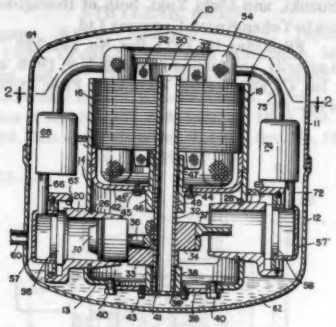
Filed Dec. 23, 1971, Ser. No. 211,242

Int. Cl. F04b *17/00, 35/00*

U.S. Cl. 417—360 **10 Claims**

A refrigerant compressor having an improved crankcase construction in the form of a pair of spaced-apart channel

members having cylinders secured thereto, the channel members interconnected so as to support the stator of the electric drive motor of the compressor.



3,762,838

PUMPING SYSTEM WITH CIRCULATING MECHANISM OF BUBBLE GAS

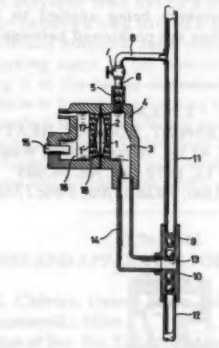
Ryuichi Sato, 43-2, 3-chome Ebisu, Shibuya-ku, Tokyo, Japan

Continuation of Ser. No. 863,556, Oct. 3, 1969, abandoned. This application Sept. 22, 1971, Ser. No. 182,647

Claims priority, application Japan, Oct. 8, 1968, 43/72850

Int. Cl. F04b *43/06*

U.S. Cl. 417—395 **2 Claims**



This specification discloses a pumping system with circulating mechanism of bubble and gas in which the pump room at its upper portion is provided with a check valve which at its upper end is connected to a guide sleeve which at its upper end is coupled through a valve with a conduit connected to an upper portion of the pump pipe provided at its lower end with an outlet valve so that a divided flow which is sufficiently small as not to draw up the slurry is formed.

3,762,839

CENTRIFUGAL PUMP WITH MAGNETIC DRIVE

Nikolaus Laing, Hofener Weg 35-37, Aldingen bei Stuttgart, Germany

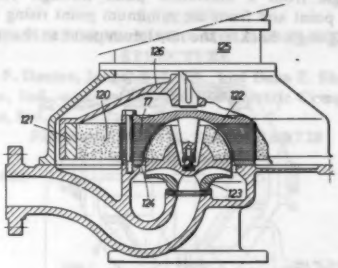
Division of Ser. No. 9,916, Feb. 9, 1970, Pat. No. 3,645,650. This application May 17, 1971, Ser. No. 144,200

Claims priority, application Austria, Dec. 30, 1969, 12101/69; Feb. 10, 1969, 1319/69

Int. Cl. F04b *35/04*

U.S. Cl. 417—420 **13 Claims**

In a centrifugal pump in which the impeller and a first pole ring of a magnetic transmission form a unitary structure, the latter is driven through a magnetically permeable separating wall. The magnetic transmission has a second pole ring and, between it and the separating wall, a conductor pole ring comprising a plurality of conductors with the two pole rings being independently arranged for rotation with respect to one another. The two pole rings each have a plurality of pole faces of alternating polarity with one of the pole rings having more pole faces than the other, whereby rotation of one of the pole rings with respect to the other pole ring will be at a predetermined ratio.



3,762,840

ROTARY PISTON ENGINE OF TROCHOIDAL CONSTRUCTION

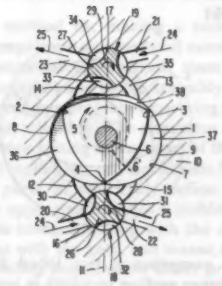
Josef Merz, Ruit, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed May 7, 1971, Ser. No. 141,210

Claims priority, application Germany, May 8, 1970, P 20 22 615.7

Int. Cl. F01c *1/02, 11/00;* F04c *23/00*

U.S. Cl. 418—5 **15 Claims**



A rotary piston steam engine of trochoidal construction which includes at least one piston with $n + 1$ corners sliding with its piston corners along the trochoidal surface of the housing casing having n arcs, in which one inlet and one outlet channel for the supply and discharge of steam is provided in proximity of each transition between the arcs of the trochoidal surface.

3,762,841

AXIAL COMPRESSOR

Auvo Antti Savikurki, Nekala, Tampere, Finland

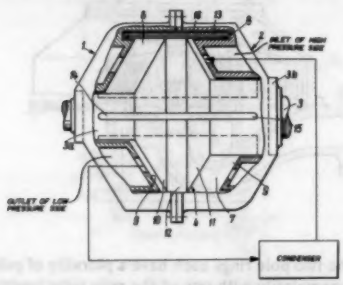
Filed Feb. 26, 1971, Ser. No. 119,116

Int. Cl. F01c *1/00;* F04c *17/00, 23/00*

U.S. Cl. 418—13 **2 Claims**

An axial compressor which includes a housing formed of two end parts within which is rotatively mounted a rotor the axle of which is rotatively carried on bearings in the respective end parts. Radial openings are located in the rotor and wings

are positioned in these openings which are adapted to be moved axially back and forth. This movement is caused by screwlike direction surfaces on the inner surface of each of the two end parts which surfaces are axially opposite each other. The direction surface on one end part lowering with a certain rising angle from a maximum point through 180° to a minimum point and from the minimum point rising with the same rising angle back to the maximum point so that the maximum and minimum points of the direction surfaces of one end part is situated at 180° from the corresponding points of the other end part. The screw-like direction surfaces are made oblique so their general line crosses the axle at an angle smaller than 90°. The axial ends of the rotor are formed as cones which are tapered axially outward from the middle of the rotor. The cone angle of the cone is twice as large as the inclination angle of the first-mentioned angle.



3,762,842

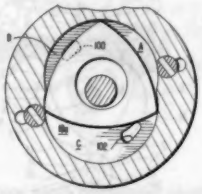
EXPANSIBLE FLUID ROTARY ENGINE

Leslie C. George, Jr., 1412 Milan St., New Orleans, La.

Continuation-in-part of Ser. No. 839,012, July 3, 1969, Pat. No. 3,628,899. This application Oct. 20, 1971, Ser. No. 190,831

Int. Cl. F01c *1/02*; F04c *1/02*, *17/02*

U.S. Cl. 418—61 14 Claims



The engine comprises a two lobed housing having an epitrochoidal inner surface in which is mounted a triangular rotor on an eccentric carried by a central driven shaft, the rotor and epitrochoidal surfaces forming variable volume working chambers. In one form, inlet and exhaust valves are disposed in the housing on opposite sides of the cusps of the epitrochoidal surfaces. A timing mechanism oscillates the valves between open and closed positions to respectively admit expansible fluid into the chambers to rotate the rotor and to exhaust the expanded fluid from the chambers. The valves in their closed positions have surfaces conforming to the lobe surfaces to permit the apex portions of the rotor to sweep past the valves without breaking the seal between adjacent chambers. The valves are timed by a plurality of cam shafts coupled to the driven shaft. The rotor can be driven in the reverse direction. In another form, rotary valves are utilized to admit expansible fluid into the chambers, such valves opening through the epitrochoidal surfaces. Exhaust ports opening through the end wall may be employed with either rotary or oscillatory valves. In a further form, rotary valves can be disposed for admitting fluid through the end walls of the housing.

3,762,843

VAN-TYPE ROTARY HYDRAULIC TRANSDUCER

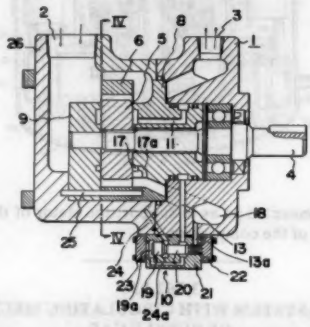
Noboru Suzuki, and Uichi Yuki, both of Ibaragi-ken, Japan, assignors to Yuken Kogyo Company Ltd.

Filed May 10, 1971, Ser. No. 141,728

Claims priority, application Japan, July 9, 1970, 45/59509

Int. Cl. F01c *21/00*; F03c *3/00*; F04c *15/00*

U.S. Cl. 418—80 4 Claims



A vane-type rotary hydraulic transducer, being a pump or a motor, in which a rotor equipped with vanes rotates within eccentric cam means which causes spaces between the vanes to expand and contract as the motor rotates, the spaces communicating with respective high and low pressure chambers when in different angular positions, and a pressure intermediate the pressures in these chambers being applied to the spaces between blades when they are positioned between said angular positions.

3,762,844

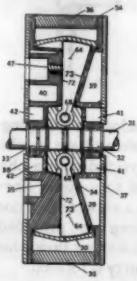
POSITIVE DISPLACEMENT, ROTARY, HEAT ENGINE

Kjell Isaksen, 9737 S.E. 41 St., Mercer Island, Wash.

Filed May 12, 1970, Ser. No. 36,605

Int. Cl. F01c *1/00*; F02b *53/08*; F04c *17/00*

U.S. Cl. 418—218 5 Claims



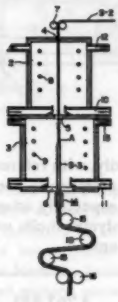
The principle of compression in positive displacement, rotary engines working on basis of sinusoidal, cyclic compression and expansion is described and illustrated. The principle is adapted to a new, continuous flow, four stroke internal combustion engine with all compression-expansion chambers performing complete thermodynamic cycles for every revolution of the rotor, and the internal gas pressures acting on differential vane areas dynamically exposed during rotation. The operation of the engine is described, and estimated engine performances are shown for comparison with representative heat engines.

3,762,845

APPARATUS FOR PRODUCTION OF FOAMED SHEET OF ETHYLENIC RESIN

Norio Sagane, Kyoto; Shinsaku Nakata, Toyonaka-shi; Hiroshi Ueda, Urawa-shi and Teiji Matumura, Minamisa-itama-gun, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

Division of Ser. No. 861,288, Sept. 26, 1969, Pat. No. 3,711,584. This application Oct. 7, 1971, Ser. No. 187,466
Int. Cl. B29d *27/00*
U.S. Cl. 425—4 C 5 Claims



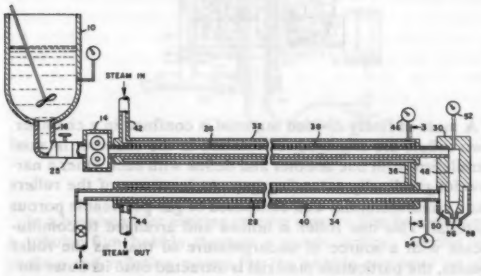
Apparatus for producing a wrinkle-free, highly foamed sheet of an ethylenic resin having a uniform and fine cellular structure by causing a long strip of a sheet-like molded article of a cross-linked ethylenic resin containing a normally solid organic blowing agent to fall downwardly and continuously transferring it in the falling direction, heating the sheet-like molded article in transit to a foaming temperature, the heating being controlled so that a starting position of foaming along the widthwise direction of the sheet-like article will not appreciably fluctuate upwards or downwards, and extending the foamed sheet-like article in the width-wise direction.

3,762,846

PROCESS AND APPARATUS FOR MAKING CANDY FLOSS

Thomas E. Chivers, Osseo, Minn., assignor to General Mills Inc., Minneapolis, Minn.

Division of Ser. No. 730,057, May 17, 1968, Pat. No. 3,557,717. This application Sept. 18, 1970, Ser. No. 73,612
Int. Cl. A23g *7/00*
U.S. Cl. 425—7 2 Claims



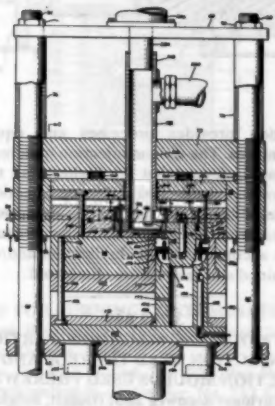
Process and apparatus for making candy floss from a cooked slurry or syrup, containing sugar and water, and if desired, other flavoring and/or coloring ingredients. Most of the moisture is removed from the slurry by cooking the slurry at a high temperature. A pressurized gaseous medium such as air, is used to diffuse the cooked candy as it is sprayed from a discharge opening, and convert it into floss form.

3,762,847

APPARATUS FOR MAKING A MOLDED ELECTRICAL STRUCTURE

Thomas F. Deuter, Jonesboro, Ark., and Dean E. Shaffer, Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Sept. 15, 1971, Ser. No. 180,728
Int. Cl. B28b *3/10*
U.S. Cl. 425—125 6 Claims

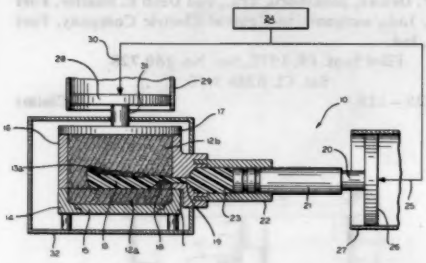


Apparatus and method for making a molded composite structure which comprises a core and coil assembly and a substantially rigid interstitial agglomerate mass of particulate material secured together and to the assembly by a hardened matrix, the mass forming a protective covering for at least part of the core and coil assembly. The apparatus includes a first mold part for accommodating at least part of the core and coil assembly, a second mold part, and mechanism for opening and closing the mold parts to selectively define a substantially closed cavity. The apparatus includes a molding composition passageway or gate communicating with the cavity. A filling tube communicates with the gate, and means are provided to rapidly force a molding composition under pressure into the closed cavity at a substantially constant, uniform rate and maintain pressure on the material within the cavity during hardening of the matrix portion of the structure. The mold parts are heated to harden the matrix portion of material within the closed cavity, while the gate region is cooled, as by circulating cooling water through coolant passages, to maintain the composition flowable and matrix former unhardened in the tube. Vents formed in the cavity provide the desirable result of reducing the occurrence of articles considered defective because of relative separation of molding composition constituents and incomplete mold cavity filling. Disclosed method includes subjecting a molding composition to a relatively low thermal state environment, and thereafter subjecting a mass of the composition to a relatively elevated thermal state environment while moving the material at a relatively high and substantially constant rate of speed into a closed mold cavity, holding the composition in the closed cavity until a characteristic temperature of at least one of the materials in the molding composition is reached within the closed cavity and thereafter opening the mold cavity, and then removing a structure from the cavity.

3,762,848
EQUIPMENT FOR MOLDING DENTURES

Robert E. Muller, Winnetka, Ill., assignor to Astron Dental Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 802,045, Feb. 25, 1969, abandoned. This application July 6, 1971, Ser. No. 159,772
Int. Cl. B29c 1/16
U.S. Cl. 425—175 4 Claims

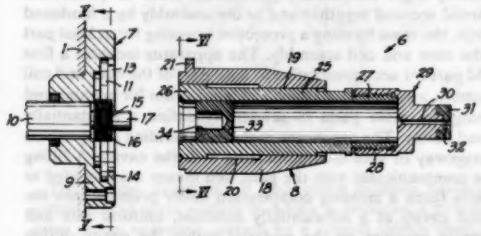


The invention provides processes and equipment for fabricating dentures. The unique injection molding equipment has mold clamping forces that are higher than the injection forces to guarantee mold closure during injection of dental plastic resin. In addition, the said forces are derived from the same pressure source. By these provisions, dentures are provided wherein accurate denture duplication and/or proper fit is reliably obtained and raised bites eliminated.

3,762,849
INJECTION MOULDING MACHINES, PARTICULARLY TO THE INJECTION HEAD THEREOF AND TO THE INJECTION MOULDS USED THEREWITH

Karel Claes, Kuringersteenweg 285, Hasselt, Belgium

Filed June 10, 1971, Ser. No. 151,806
Int. Cl. B29f 1/02
U.S. Cl. 425—190 3 Claims



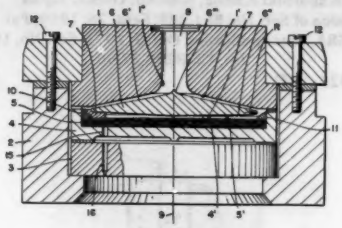
The invention pertains to improvements to injection moulding machines, according to which said machine is provided with an easily removable injection head designed to contain a supply of synthetic resin material sufficient to mould a series of objects within a mould provided with a closing device.

3,762,850
SPINNING HEAD

Helmut Werner, Elsenfeld; Wolfgang Grimm, and Heinz Linhart, Dr. both of Erlenbach, all of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed July 26, 1971, Ser. No. 166,190
Int. Cl. B29f 3/04
U.S. Cl. 425—198 10 Claims

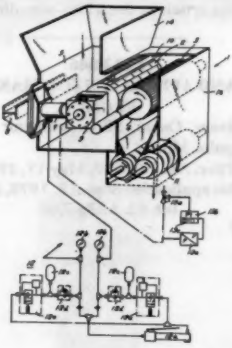
A spinning head in a melt spinning apparatus wherein a central conically shaped melt space between the upper cover or stem portion of the outer housing and the lower nozzle plate assembly contains a concavo-concave disk member arranged to provide a continuously narrowing flow path for the melt being received from a coaxial feed line and passing first outwardly and then inwardly, with reference to the spinning head axis, around the disk member to the nozzle plate assembly. This spinning head is especially adapted to handle synthetic linear fiber-forming polymer melts under high pressure, e.g., in spinning nylon filaments.



3,762,851
PROCESSING OF FINELY DIVIDED PARTICULATE MATERIALS

Helmut Reinhardt, Weiss near Cologne; Berndt Brandt, and Albert Peters, both of Wesseling-Berzdorf, all of Germany, assignors to Deutsche Gold-Und Silber-Scheideonstatt vormals Roessler, Frankfort am Main, Germany

Division of Ser. No. 874,654, Nov. 6, 1969. This application July 12, 1971, Ser. No. 161,790
Claims priority, application Germany, Nov. 8, 1968, P 18 07 714.0
Int. Cl. B29c 15/00
U.S. Cl. 425—223 12 Claims



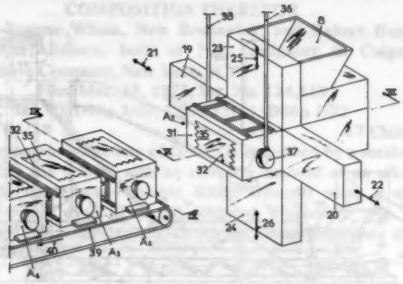
A mass of finely divided material is confined in a chamber. Two rollers are arranged for rotation in the chamber in axial parallelism with one another and define with each other a narrow longitudinally extending gap. At least one of the rollers has a circumferential wall composed of gas-permeable porous material. This one roller is hollow and arranged to communicate with a source of underpressure so that, as the roller rotates, the particulate material is attracted onto its outer surface forming a layer thereon which is subjected to substantial compaction when it passes through the gap between the two rollers. The rollers rotate in opposite direction. The compacted material is removed from the outer surface of the roller or rollers and subdivided into portions of desired size.

3,762,852

MOLDING PRESS FOR PASTE-LIKE MATERIAL

Andre Boffet, and Pierre Boffet, both of La Bardiniere-Chauffailles (Saone et Loire), France

Filed Mar. 16, 1971, Ser. No. 124,694
Int. Cl. B29c 3/04, 7/00
U.S. Cl. 425—330 6 Claims



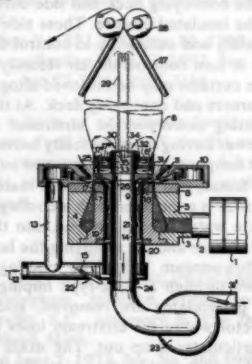
A molding press is provided with a hopper for feeding a mixture into a chamber between a main piston in the press and an opposed piston slidably mounted in an insert which may be placed in the press. The insert piston presses the material against the main piston to form the bottom of a container and four transversely arranged pistons move into the chamber to press the material against the sides of the insert piston to form the four sides of the container. The main piston then ejects the formed container from the chamber into the insert and the insert is then removed from the press to allow the formed container to harden before removing the container from the insert.

3,762,853

COOLING MEANS FOR TUBULAR PLASTICS FILM EXTRUDED IN THE FORM OF A BUBBLE THROUGH AN ANNULAR NOZZLE ORIFICE

Hartmut Upmeier, Tecklenburg, Germany, assignor to Windmoller & Holscher, Westphalia, Germany

Filed June 29, 1971, Ser. No. 157,938
Claims priority, application Germany, June 30, 1970, P 20 32 346.0
Int. Cl. B29f 3/00
U.S. Cl. 425—326 9 Claims



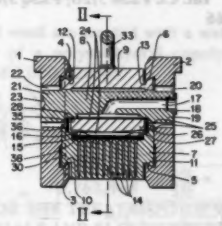
In a blowhead for making tubular plastics film by extruding a tubular film bubble through a nozzle orifice, interior air cooling and inflating means for the bubble comprise an air inlet passage extending axially through the blowhead, an air outlet tube which is disposed centrally through the inlet passage, projects into the bubble with one end and has a suction fan connected to its other end, a first guide ring around the outlet tube for directing air from the inlet passage onto the bubble wall, and at least one additional guide ring downstream of the first ring and disposed around the outlet tube at a spacing therefrom to define an annular aperture through which some of the air can flow further into the bubble.

3,762,854

MELT SPINNING APPARATUS

Harley Kilsdonk, Zevenaar, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Mar. 29, 1971, Ser. No. 129,088
Claims priority, application Netherlands, Apr. 8, 1970, 7004994; Apr. 8, 1970, 7004996
Int. Cl. B29f 3/04
U.S. Cl. 425—382.2 11 Claims



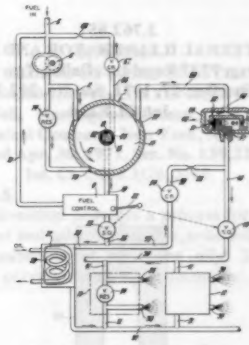
A melt spinning assembly combining ease of assembly and disassembly with an effective sealing means during operation.

3,762,855

METHOD FOR BURNING CONTAMINATED FUEL

Cecil H. Sharpe, Brownsburg, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 82,573, Oct. 21, 1970, Pat. No. 3,658,249, which is a continuation-in-part of Ser. No. 752,820, Aug. 15, 1968, abandoned. This application Feb. 9, 1972, Ser. No. 224,903
Int. Cl. F23b 7/00
U.S. Cl. 431—2 6 Claims



A fuel system for a gas turbine engine adapted to handle dirty fuel includes a separating device of a centrifuge-filter type through which fuel is supplied from a fuel pump to a fuel control which controls the operation of the engine. The centrifuge-filter has a swirl chamber with a tangential inlet, a central annular filter, and outlets both outside and inside of the filter. It discharges a large portion of the fuel substantially clean and a small portion bearing the dirt. The clean fuel flows through the fuel control to small diameter ports of fuel nozzles and, at higher fuel flow rates, through a resistance valve or valves to large area ports of the fuel nozzles. The dirty fuel flows to the large flow ports of the nozzles, by-passing the fuel control. Alternatively, the centrifuge-filter may be

downstream of the fuel control. In either case, a line from adjacent the outer surface of the filter to the pump inlet or to the large area ports acts to clean the filter by recirculating or discharging the finer dirt which tends to accumulate on the filter at low fuel flow rates.

3,762,856

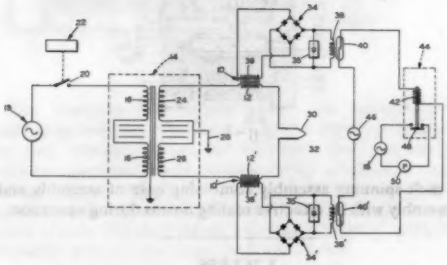
BURNER IGNITION CONTROL SYSTEM

Ralph D. Alessio, Waterbury, Conn., assignor to Tele-Conn Enterprises, Inc., Wolcott, Conn.

Continuation-in-part of Ser. No. 165,966, Jan. 26, 1971, abandoned. This application Apr. 5, 1972, Ser. No. 241,213

Int. Cl. F23n 5/26; F23q 3/00

U.S. Cl. 431—66 **16 Claims**



An ignition control and safety system for a fuel consuming combustion apparatus, the system being characterized by establishment of a continuous arc during operation and including means for monitoring the arc and controlling operation of the fuel supply pump commensurate with the absence or existance of the arc.

3,762,857

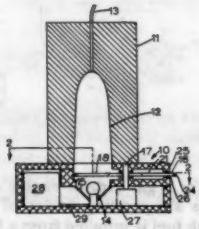
CANDLE INTERNAL ILLUMINATOR AND MOUNT BASE

Frits J. Andeweg, 7737 Royal Ln., Dallas, Tex.

Filed Dec. 27, 1971, Ser. No. 212,218

Int. Cl. F23d

U.S. Cl. 431—253 **10 Claims**



A support and light source structure providing internal illumination to a cavity within a candle for diffused passage of light through candle wax. It is a candle mounting base that in addition to having a light source can include moveable colored glass or plastic for varied color illumination of the candle. Some bases also include a speaker and cassette tape player along with an internal rechargeable power pack and some have a power line to a standard electric plug.

3,762,858

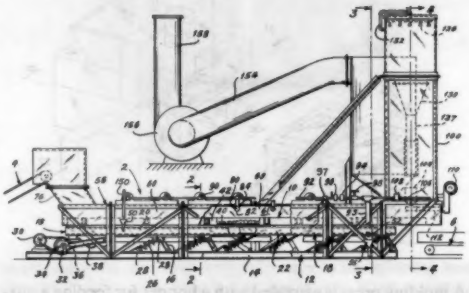
HIGH TEMPERATURE SCRAP CLEANING CONVEYOR

James L. Torrence, Port Richey, Fla., assignor to American Pulverizer Company, St. Louis, Mo.

Filed Dec. 16, 1971, Ser. No. 208,685

Int. Cl. B65g 21/00

U.S. Cl. 432—72 **12 Claims**



A high temperature scrap cleaning conveyor includes a conveyor comprised of a conveying deck, a mechanism for oscillating the deck, and a water-filled pan beneath the deck. Shredded scrap metal contaminated primarily with paint, oil and grease is deposited on one end of the conveying deck and the oscillating motion of the deck causes the scrap to move toward the deck's opposite end, tumbling and turning as it does. Water is circulated through the pan and this water not only insulates the oscillating mechanism from the heated conveying deck, but it also cools the conveying deck, since the oscillations cause the water to splash against the underside of the deck. A framework supports an insulated closure which extends over and along the sides of the conveying deck, and this closure defines a fire chamber in which a series of transversely extending burners are located. The burners produce downwardly directed flames which not only raise the temperature of air within the fire chamber, but also impinge on the scrap carried on the conveying deck and burn the contaminants from the scrap. Since the scrap tumbles as it advances, all surfaces thereof are presented toward the flame. An airstream is created within the fire chamber by a fan, and the air for this airstream is derived from air gaps existing between the sides of the conveying deck and side curtains which form the sides of the insulated closure. These side curtains may be adjusted inwardly and outwardly to control the size of the air gaps and this in turn controls the air velocity through the fire chamber. The curtains may be removed altogether to gain access to the burners and conveying deck. At the discharge end of the oscillating conveyor the airstream enters a smoke elimination tower having a high velocity burner at its entrance for raising the temperature of the airstream sufficiently to consume smoke, fumes, and most entrained material. The smoke elimination tower is connected with a cooling chamber where a high pressure water mist is sprayed into the airstream for cooling the airstream and for removing the larger particulates therefrom. Downstream from the cooling chamber, the airstream flows through a plate-type impingement scrubber where more particulates are removed, and thence into a cyclone collector where the airstream loses velocity and the remaining particulates drop out. The drain water from the cooling chamber and scrubber flows into the cyclone collector where it flushes the particulates dropped therein. The water discharges from the collector into a settling tank for clarification and is recycled by a pump through the water pan of the oscillating conveyor. Only fresh water is supplied to the nozzles of the cooling chamber and to the scrubber. The fan is located downstream from the cyclone colector and discharges the airstream into the atmosphere in a purified condition. The foregoing units are interlocked and no one unit is operated independently.

3,762,859

ENHANCING THE APPARENT WHITENESS OF FABRICS BY APPLYING AN EFFECTIVE AMOUNT OF AN ALKALI AND HEAT STABLE WATER-SOLUBLE DISAZO BLUE DYESTUFF, FABRIC SOFTENING AND DETERGENT COMPOSITION THEREFOR

Harold Eugene Wixon, New Brunswick, and Robert Henry Trimmer, Edison, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,510
Int. Cl. D06p *5/02*; C09b *35/16*; D06p *1/02*
U.S. Cl. 8—18 17 Claims

The apparent whiteness of fabrics is enhanced by a method of treating the fabrics with an effective amount of an alkali and heat stable water-soluble disazo dyestuff using a sulfonated disazo dyestuff of the diphenyl, dinaphthyl type. A fabric softening and laundry detergent composition are disclosed therefor.

3,762,860

FOAM DYEING PROCESS

David H. Abrahams, New Rochelle, N.Y., and A. Douglas Graham, Charlotte, N.C., assignors to Dexter Chemical Corporation, Bronx, N.Y.

Filed May 27, 1971, Ser. No. 147,670
Int. Cl. C06p *3/82*
U.S. Cl. 8—21 A 1 Claim

A process for dyeing polyester acrylic and polyamide fibers is shown. A fabric is padded with a foam formed from an aqueous solution of a dyestuff, a foaming agent and a carrier for the dyestuff and the padded fabric is maintained at elevated temperatures to fix the dye. The advantages of the process include improved dye prefixation, improved migration of the dye into the fiber, higher color yields in the fabric even after relatively short dyeing times and improved dimensional stability of the dyed fabrics.

3,762,861

POLYAMIDE AND POLYESTER FIBERS DYED WITH A 1,3,4-THIADIAZOLYLAZO-3-(CYCLOHEXYLAMINO)ACYLANILIDE DYE

Max A. Weaver; James M. Straley, and William H. Moore, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 833,744, June 16, 1969, Pat. No. 3,673,169. This application Mar. 27, 1972, Ser. No. 238,531
Int. Cl. D06p *3/26*, *3/54*
U.S. Cl. 8—41 R 4 Claims

Fibers having a basis of a synthetic linear polyamide or linear polyester are dyed bright, fast, scarlet to pink shades with a monoazo compound containing a 1,3,4-thiadiazolyl diazo component and an N-cyclohexyl-m-acylamidoaniline coupling component.

3,762,862

SOLVENT BLEACHING PROCESS

William K. Cunningham, Midland, Mich., and Donald B. Knight, Greenville, S.C., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 7, 1972, Ser. No. 260,599
Int. Cl. D06l *3/02*, *3/06*
U.S. Cl. 8—111 9 Claims

Cotton and other cellulosic fibers are effectively and rapidly bleached by wetting with a suspension of hydrogen peroxide in a chlorinated hydrocarbon solvent and drying the wetted material by exposure to hot chlorinated hydrocarbon solvent vapor. The process is particularly effective with raw cotton and cotton linters.

3,762,863

WOOL OR HAIR TREATED WITH METHACRYLIC ANHYDRIDE OR ITACONIC ANHYDRIDE COPOLYMERIZED WITH MALEIC ANHYDRIDE AND AFTER TREATED WITH MERCAPTOETHYLAMINE AND PROPYLENE DIAMINE OR BUTYL AMINE

Roger Charle, Soisy sur Montmorency; Gregoire Kalopissis; Andrio Viout, both of Paris; Constantin Aretos, Issy-les-moulineaux, and Jean Gascon, Paris, all of France, assignors to Societe anonyme dite: L'Oreal, Paris, France

Continuation of Ser. No. 831,711, June 9, 1969, abandoned. This application Jan. 13, 1972, Ser. No. 217,650
Int. Cl. A61k *7/10*; D06m *3/06*
U.S. Cl. 8—127.51 2 Claims

Human hair and wool are treated with a water or aqueous alcoholic solution of a polysulfhydryl copolymer having a molecular weight of 1,000 – 20,000.

3,762,864

PROCESS FOR THE TREATMENT OF WOOLEN MATERIALS AND BLENDS THEREOF

Guido Verri, and Anna Maria Verri, nee Cesini, both of Via delle Primule 4, Milan, Italy

Filed June 28, 1971, Ser. No. 157,674
Int. Cl. D06m *3/06*, *3/10*, *13/36*
U.S. Cl. 8—128 R 7 Claims

An applicative and preparative process for the disposition of woollen and wool blend materials intended for articles to be printed, dyed or bleached, for conferring on said wool and wool blends improved shrinkage resistance and non-felting characteristics which consists of treating the material initially and successively with an initial single primary disproportionation reaction and/or advantageously with an alternate disproportionation reaction.

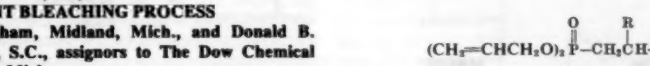
3,762,865

FLAME RETARDING OF SOLID SUBSTRATES WITH ALLYL 2-CARBAMOYLALKYLPHOSPHONATES

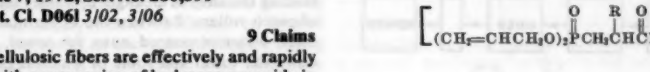
Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Apr. 30, 1971, Ser. No. 139,222
Int. Cl. C09d *3/76*, *5/18*
U.S. Cl. 8—115.5 16 Claims

The present invention provides a process for flame retarding textiles, paper and other flammable, solid substrates by applying to the substrate at least one allyl 2-carbamoylalkylphosphonate corresponding to the formulae:



and



where R is a hydrogen or methyl radical, whereupon the phosphonate is cured by free radical initiation so as to form an insoluble, fire retardant resinous finish.

3,762,866

TEXTILE FINISHING PROCESSES

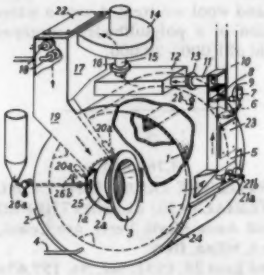
John Rayment, Chilwell; Derek Dexter McCordell, Luton, and Colin Parr, Wigston, all of England, assignors to Samuel Peg & Son Limited, Leicester, England

Filed Feb. 3, 1972, Ser. No. 223,146

Claims priority, application Great Britain, Feb. 16, 1971, 4,702/71; Apr. 23, 1971, 10,897/71; Apr. 23, 1971, 10,898/71; June 23, 1971, 29,376/71; Nov. 18, 1971, 53,566/71

Int. Cl. B05c *5/00*

U.S. Cl. 8—149.1 **15 Claims**



The invention sets out a method of and apparatus for finishing textiles, e.g., for dyeing, bleaching, scouring etc. It is particularly concerned with low liquor ratio processes, i.e., where the ratio of textile to liquor is such that all or substantially all of the liquor is absorbed during an impregnation step of the process. The impregnation step is followed by a heating step and this comprises moving the impregnated textile in a water vapour saturated atmosphere while heating it to a predetermined temperature. One machine for performing the method comprises a rotatable drum mounted in a casing; textile is tumbled within the drum, the casing defining a chamber within which a saturated atmosphere is maintained. Alternatively a loop of textile e.g. a length of carpet, may be arranged round a drive drum within a casing and may be moved by being driven around within the casing.

3,762,867

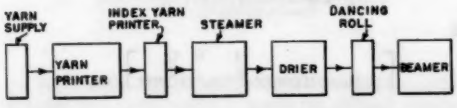
TEXTILE PRINTING METHOD

Allan H. Crawford, Amsterdam, N.Y., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.

Division of Ser. No. 684,055, Nov. 17, 1967, Pat. No. 3,561,235. This application Feb. 8, 1971, Ser. No. 113,757

Int. Cl. B05c *9/12, 9/14*

U.S. Cl. 8—149.1 **2 Claims**



The invention relates to a method for printing yarn. The method includes the steps of withdrawing yarn from a yarn supply and printing on such yarn, and including the steps of inserting an index yarn among the sheet of yarns and printing a regularly recurring pattern on the index yarn.

3,762,868

METHOD FOR VAPOR TREATING TEXTILE MATERIAL

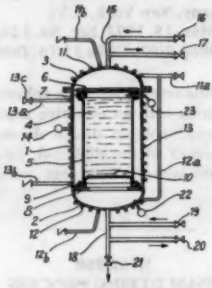
Gerard Champel, and Francois Ody, both of Montelimar, France, assignors to Societe anonyme dite: Etablissements Joseph Lagarde, Montelimar, France

Filed Jan. 14, 1972, Ser. No. 217,847

Claims priority, application France, Jan. 18, 1971, 7101460

Int. Cl. D06c *1/04*

U.S. Cl. 8—149.2 **4 Claims**



Method of vapor treating textiles by first supplying vapor so that pressure on one side of material is higher than on the other, then equalizing the pressure, and repeating this process cyclically. Invention includes apparatus for carrying out this process comprising two-compartment chamber with pressure responsive means in one compartment controlling supply of vapor to other compartment.

3,762,869

WASHING MACHINES

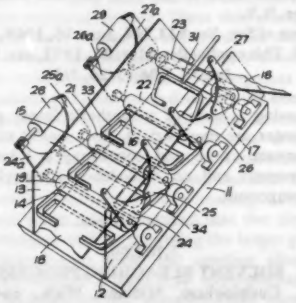
Andrew Thomas Kennedy, and Maurice Charles Lemon, both of Sussex, England, assignors to David Kennedy (Engineers) Limited and Universal Towel Company Limited, Sussex, England

Filed Nov. 2, 1971, Ser. No. 194,942

Claims priority, application Great Britain, Nov. 13, 1970, 54,259/70

Int. Cl. D06c *27/00*; D06f *29/00, 35/00*

U.S. Cl. 8—151 **6 Claims**



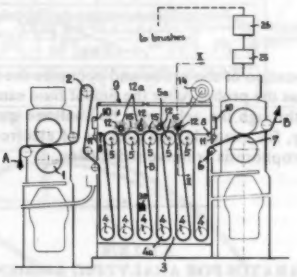
A method of rinsing a continuous strip of towel comprises feeding the strip at an angle upwardly through a series of pairs of pinch rollers. Between the uppermost two pairs of rollers, clean water is poured onto the towel, some of which runs down the towel and some of which is carried up with it. The water is removed at the two sets of pinch rollers, collected, and passed under gravity to be poured onto the towel between the second and third pairs of rollers from the top. This is repeated for each pair of rollers, so that the water passes downwardly through the apparatus, being used several times and getting dirtier, while the towel passes upwardly, being rinsed several times, each time with cleaner water than before.

3,762,870

METHOD FOR CLEANING, ESPECIALLY THE REMOVAL OF UNDESIRED SOLID PARTICLES FROM A CONTINUOUSLY GUIDED WET-TREATED TEXTILE WEB, ESPECIALLY PRINTED WEBS

Willi Probst, and Hans Weber, both of Uzwil, Switzerland, assignors to Maschinenfabrik Benninger AG, Uzwil, Switzerland

Filed Nov. 29, 1971, Ser. No. 202,797
Claims priority, application Switzerland, Nov. 30, 1970, 17687/70
Int. Cl. B05c *3/132*
U.S. Cl. 8—151 5 Claims



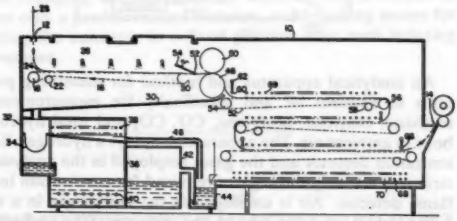
A method of cleaning, especially removing undesired solid particles, from a wet-treated textile web, especially a printed web, continuously guided over rollers, wherein the textile web is guided past individual brushes over its entire width, at brief intervals or spacing, at those locations where the opposite face of the textile web travels over a web support, and directly thereafter this textile web is flushed.

3,762,871

METHOD FOR SOLVENT SCOURING KNIT WEBS AND THE LIKE

William J. Holm, 26 East Ln., Springfield, Vt.

Division of Ser. No. 881,497, Dec. 2, 1969, Pat. No. 3,640,099.
This application Dec. 13, 1971, Ser. No. 207,605
Int. Cl. B05c *3/132*
U.S. Cl. 8—151 1 Claim



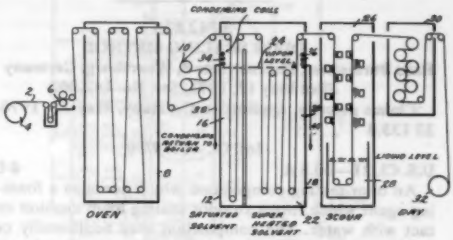
A running web of easily stretchable material such as knit goods or the like is solvent scoured on a continuous basis by means of a plurality of conveyor belts which deliver the web from a solvent spray station in an enclosure through a drying stage, the longitudinal tension in the fabric itself being employed to control the speed of the conveyors. The web is transferred from one conveyor to the next in a relaxed condition and in the drying stage steam coils are employed to heat the enclosed atmosphere whereby the vaporized solvent itself serves as a drying agent in flashing off liquid solvent in the web.

3,762,872

CONTINUOUS SOLVENT DYEING PROCESS

William L. Acree, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed July 7, 1971, Ser. No. 160,423
Int. Cl. D06p *3/52, 3/54*
U.S. Cl. 8—176 15 Claims



Fabric, preferably polyester fabric, dyed in any appropriate manner with a non-reactive dyestuff is introduced while cool into a first chamber filled with saturated solvent vapors, the wet fabric is then passed to another chamber filled with superheated vapors of the same solvent which permits the solvent to penetrate the fibers and carry the dye into the surface of the fibers.

3,762,873

CORROSION INHIBITING METHOD USING SUBSTITUTED SUCCINIMIDES

Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, Wilmington, Del.

Filed Feb. 16, 1971, Ser. No. 115,818
Int. Cl. C23f *11/04*; C23g *1/06*
U.S. Cl. 21—2.7 R 3 Claims

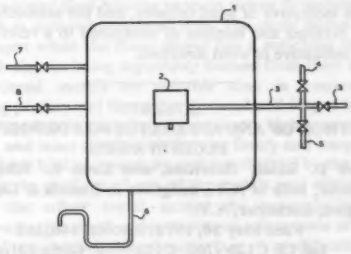
Substituted succinimides and derivatives thereof, formed by (1) reacting a hydrocarbon with a maleic compound or a derivative thereof to yield a hydrocarbon succinate and then (2) reacting the hydrocarbon succinate with an amine to form an imide; and to the uses of these hydrocarbon succinimides, for example in aqueous and/or oxygenated systems, as illustrated by aqueous brines such as in water flooding systems, cooling systems such as in cooling towers, auto radiator systems, etc., drilling muds, air drilling systems, etc., as corrosion and/or scale inhibitors, etc.

3,762,874

METHOD OF STERILIZING INDUSTRIAL PRODUCT-DISPENSING PLANTS

Jean-Luc Berry, Mesnil Sur L'Estree, France, assignor to E. P. Remy et Cie, Dreux, France

Filed June 22, 1971, Ser. No. 155,420
Claims priority, application France, July 29, 1970, 7027994
Int. Cl. A61l *1/00, 13/00*; B08b *9/08*
U.S. Cl. 21—57 11 Claims



Method of sterilizing industrial plants, for the conditioning of foodstuffs, wherein a sterilizing fluid carried to a tempera-

ture higher than 100° C., for instance from 120° to 130° C., is made to circulate in the plant, the said sterilizing fluid being constituted, at least partially, by a compound selected among the compounds of the poly-alcohol group and whose vapor tension, at a temperature higher than 100° C. and in particular within the aforesaid range of temperatures, is lower than atmospheric pressure.

3,762,875

ODOR SEALING METHOD

Hans Burmeister, Platenstrasse 4, Wuersburg, Germany

Filed May 12, 1971, Ser. No. 142,802

Claims priority, application Germany, May 12, 1970, P 20 23 133.8

Int. Cl. A61l 9/00

U.S. Cl. 21—60.5 A **6 Claims**

An odor-sealing composition which contains a foam-forming agent which forms an odor-sealing foam cushion on contact with water. The composition may additionally contain deodorizing, odor-improving, disinfecting, and/or cleaning additives. It is used in liquid, pulverulent, granulated, or compressed shaped form or as an aerosol. It can be applied upon a sheet-like carrier such as paper or the carrier can be impregnated therewith. The method involves forming a layer of foam on the surface of the water in a toilet bowl before using the toilet.

3,762,876

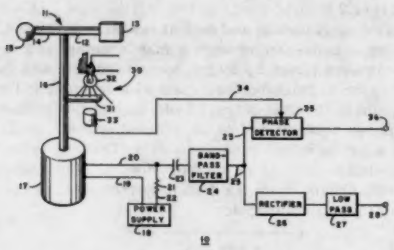
DRIVEN-VANE ANEMOMETERS

Lyle E. Koehler, New Brighton, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 7, 1971, Ser. No. 187,276

Int. Cl. G01w 1/04

U.S. Cl. 73—189 **7 Claims**



A driven vane anemometer and detection electronics therefor, for measuring both wind velocity and wind direction. An asymmetrically vaned rotor attached to a motor-driven shaft is used to produce a wind drag torque which varies cyclically with the rotation of the shaft. The difference between the maximum torque and the minimum torque throughout the cycle is indicative of wind velocity, and the azimuthal position of the maxima and minima as compared to a reference position is indicative of wind direction.

3,762,877

METHOD OF AND APPARATUS FOR DEPOSITING A FLUID IN A GEL

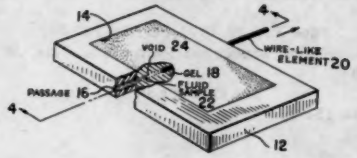
Stephen D. Rains, Henrietta, and Leon L. Wheeless, Jr., Webster, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed May 24, 1971, Ser. No. 146,262

Int. Cl. C12b 1/10; C12k 1/10; G01n 33/16

U.S. Cl. 23—230 B **25 Claims**

Apparatus suitable for application in chemical analysis and particularly electrophoresis and utilizing a gel cast into a frame through which a wire-like element, having a fluid sample deposited proximate one of its ends, is drawn. Upon withdrawal of the wire-like element the fluid sample fills the space previously occupied by the wire-like element. The line of fluid sample through the gel is thereby placed exactly in the previous location of the probe and occupies the same volume and shape as the probe. After the line of fluid sample has been deposited through the gel it may be analyzed quickly and accurately by, for example, the process of electrophoresis, immunoelectrophoresis or immunodiffusion.



3,762,878

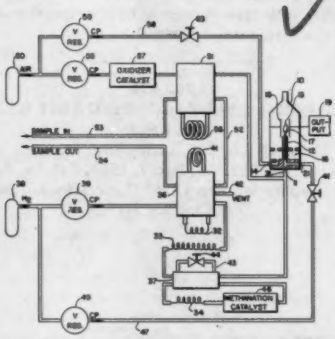
APPARATUS FOR ANALYZING AMBIENT AIR

Richard Villalobos, Fullerton, Calif. assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 19, 1971, Ser. No. 134,983

Int. Cl. G01n 31/08, 31/12

U.S. Cl. 23—232 E **13 Claims**

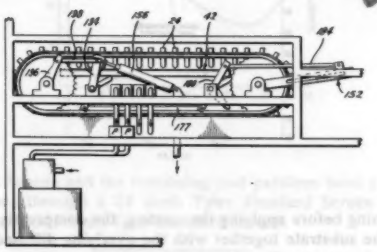


An analytical apparatus and method for measuring pollutants in ambient air and specifically for measurement of methane, ethylene, acetylene, CO, CO_2 and total hydrocarbons in ambient air. The apparatus employs a hydrogen flame ionization detector and the gases employed in the analysis instrument are only those gases required for combustion in the flame detector. Air is employed as the carrier gas in a total hydrocarbon analysis line to the detector. The carrier air stream is passed through an oxidizer catalyst to completely oxidize the hydrocarbons in the carrier air to provide a true "-zero-hydrocarbon" reference level in the ionization detector against which the total hydrocarbon content of the ambient sample is compared. Hydrogen is employed as the carrier gas in a gas chromatograph analyzer for separating the hydrocarbons and carbon monoxide in an air sample. The hydrogen carrier gas simultaneously provides the hydrogen requirements of a methanator in the chromatograph line, which converts carbon monoxide and carbon dioxide into methane so that a relative measurement may be made in the ionization detector for these constituents, as well as the hydrogen gas requirements of the detector.

3,762,879
LOOP CONVEYOR FOR AUTOMATIC CHEMICAL TESTING APPARATUS

John J. Moran, Houston, Tex., assignor to Hycel, Inc., Houston, Tex.

Division of Ser. No. 737,065, June 14, 1968, Pat. No. 3,622,279. This application June 21, 1971, Ser. No. 155,153
Int. Cl. G01n *1/14, 1/18*
U.S. Cl. 23—259 18 Claims



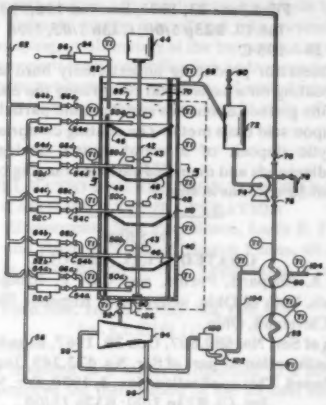
A loop conveyor for automatic chemical testing apparatus having a plurality of rigid slats for carrying a row of reaction tubes intermediate their ends with the open ends extending upwardly above the conveyor and the lower closed ends extending beneath the upper portion of the loop whereby chemical tests may be performed in the tube as the conveyor is indexed along the various positions. Heating means positioned inside the conveyor and movable upward for heating the bottom of some of the tubes and movable downwardly for allowing the conveyor to rotate. Power means for rotating the conveyor and lowering and raising the heating means and moving drying means into and out of the tubes and having a lost motion connection between the power means and the conveyor for allowing the heating means to be lowered and the drying means to be retracted away from the tubes before the conveyor is rotated. A second lost motion connection for allowing the conveyor to be rotated before the heating means is raised and the drying means is moved into the tubes. An indexing pawl engaging the conveyor for allowing the conveyor to index only a predetermined distance, and a locking means for holding the conveyor in a fixed position after each indexing movement.

3,762,880
APPARATUS FOR CRYSTALLIZATION AND RECOVERY OF ELEMENTAL SULFUR FROM SOLVENTS

Lawrence C. Tisdel, and Harry B. Scott, both of Golden, Colo., assignors to Chapman, Wood & Griswold, Ltd., North Vancouver, British Columbia, Canada

Division of Ser. No. 837,113, June 27, 1969, Pat. No. 3,679,371. This application Dec. 30, 1971, Ser. No. 214,320
Int. Cl. B01d *9/02*; C01b *17/08*
U.S. Cl. 23—273 R 12 Claims

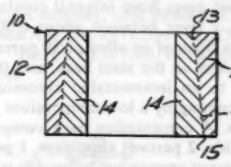
Apparatus for the crystallization and recovery of sulfur including a crystallizer vessel with inlet means for introducing a solvent with sulfur dissolved therein into the vessel at one level, and means for injecting an immiscible heat-exchange liquid at a different temperature from that of the solvent into the vessel at at least one other level different from the first level. The apparatus includes individual means for withdrawing heat-exchange liquid from the vessel, means for withdrawing crystalline sulfur slurry therefrom, and means for separating sulfur from this slurry.



3,762,881
COMPOSITE HIGH-STRENGTH MACHINE ELEMENT AND METHOD OF MAKING THE SAME

William M. Dunn, Farmington, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed June 14, 1971, Ser. No. 152,862
Int. Cl. E04c *2/08*
U.S. Cl. 29—191 3 Claims



This composite high-strength bushing consists of a heavy-load-bearing sleeve of sintered powdered high-performance alloy and a lesser-load-bearing support sleeve of sintered base metal such as sintered powdered iron. The outer sleeve has an internal taper while the inner sleeve has a matching external taper, both sleeves being separately formed from their respective powdered metals by suitable dies in conventional briquetting presses and thereafter sintered and forged by forcing them together in a hot-forging press at a high temperature. The outer and inner sleeves are thereby firmly and inseparably joined by high heat and pressure and interlocked by the migration of minute portions of one of the metals past minute portions of the other metal across the tapered interface therebetween, thereby forming an intermediate zone of the intermingled metals encircling the interface. A modification employs tapers of slightly different convergence between the outer and inner sleeves but also results in a similarly-inseparable interlocking connection by a similar migration of the metals into an intermediate zone encircling the interface.

3,762,882
WEAR RESISTANT DIAMOND COATING AND METHOD OF APPLICATION

Zigmund R. Grutza, Detroit, Mich., assignor to Di-Coat Corporation, Detroit, Mich.

Filed June 23, 1971, Ser. No. 156,090
Int. Cl. B23p *5/00*; **C23b** *5/02, 5/08*
U.S. Cl. 29—195 C **11 Claims**

A process for producing an extremely hard and wear resistant coating on a basis metal comprising the electro-deposition of fine grained diamonds and diamond particles in a metal matrix upon said basis metal. The coating comprises a uniform electrolytic deposit of a metal matrix having embedded therein diamonds and diamond particles ranging between 0.01 micron to 30 microns in size.

3,762,883
COATED STEEL ARTICLE

George A. Shepard, Parma, and Carl F. Brooker, Garfield Heights, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 680,607, Oct. 20, 1967, abandoned, which is a continuation-in-part of Ser. No. 423,249, Jan. 4, 1965, abandoned. This application Nov. 3, 1970, Ser. No. 86,623
Int. Cl. B23p *3/00*; **B32b** *15/00*
U.S. Cl. 29—196.3 **1 Claim**

A steel substrate having an intermediate adherent coating of gold or silver or copper or brass, and an outer adherent coating of zinc, in which the iron content in the coatings, occasioned by alloying between the iron and the coatings thereon, is less than about 100 milligrams per square foot of surface.

3,762,884
NICKEL ALUMINIDE COATED LOW ALLOY STAINLESS STEEL

Salvatore J. Grisaffe, Rocky River, and Ernest W. Klechke, Fairview Park, both of Ohio, assignors to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 18, 1971, Ser. No. 190,316
Int. Cl. B32b *15/00*
U.S. Cl. 29—196.2 **6 Claims**

Low alloy austenitic stainless steel is protected from oxidative corrosion and erosion at high temperatures in the presence of exhaust gases from internal combustion engines by flame-spraying a layer between about 0.003 inches and about 0.007 inches thick of an alloy of 80 percent nickel and 20 percent chromium on the steel base, and thereafter converting the layer to an intermetallic chromium containing nickel aluminide coating by a low temperature aluminum cementation process. A cementation pack comprising 96 percent aluminum oxide, 2 percent aluminum, 1 percent sodium chloride, and 1 percent ammonium bifluoride is placed on the nickel-chromium layer in an inert atmosphere for a period between four hours and 24 hours at 1400°F to 1600°F to form an intermetallic chromium containing nickel aluminide coating containing 40 to 60 atomic percent aluminum.

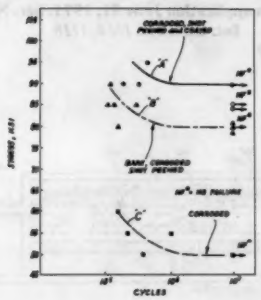
The coated steel is highly resistant to oxidation corrosion and erosion by high temperature exhaust gases from internal combustion engines. It is particularly useful in the construction of thermal reactors for exhaust systems in automobiles for the control of pollution from exhausts.

3,762,885
DIFFUSION COATING OF METALS

Kenneth K. Speirs, Universal City, and Martin Weinstein, San Antonio, both of Tex., assignors to The Chromalloy American Corporation, New York, N.Y.

Division of Ser. No. 878,596, Nov. 21, 1969, abandoned. This application Feb. 7, 1972, Ser. No. 224,256
Int. Cl. B23p *3/12*
U.S. Cl. 29—196.2 **1 Claim**

An article of manufacture is provided comprising a thermally aluminum-coated structural element of chromium-containing steel having a substantially uniform diffused layer of aluminum on the substrate thereof, said substrate being characterized by compressive stresses introduced by shot



peening before applying the coating, the compressive stresses at the substrate together with the overlying diffused layer of aluminum providing improved resistance to fatigue coupled with improved resistance to corrosion and oxidation.

3,762,886
FORMED CARBON FUEL BRIQUETS

Alfred A. Triska, New York, N.Y., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Filed June 14, 1971, Ser. No. 152,605
Int. Cl. C10l *5/00, 5/12*
U.S. Cl. 44—10 E **32 Claims**

Formed fuel briquets of reduced reactivity are prepared with the use of a binder contributing little, if any, green strength. The fuel is suitable for such purposes as industrial and metallurgical applications and for domestic heating. Briquets possessing high green strength, and high shatter and compressive strength in the cured state, are produced even while employing a rapid compacting operation, such as roll briquetting. Carbon aggregate, of controlled particle sizing, and preferably of a specified type, is an essential ingredient employed in the making of the formed fuel. The use of a hydraulic setting cement binder, such as Portland cement, which reduces the reactivity of the formed briquets, is also an integral part of the process, as are also a compacting step and a curing step, and the employment of closely controlled conditions particularly with respect to the use of water in each of these steps.

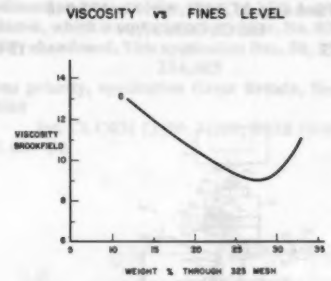
3,762,887
FUEL COMPOSITION

James T. Clancey; John A. Phinney, both of Pittsburgh, Pa.; Thomas J. Regan, Martinville, W. Va., and Edward J. Wasp, San Rafael, Calif., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Continuation of Ser. No. 518,425, Jan. 3, 1966, abandoned, which is a continuation-in-part of Ser. No. 229,423, Oct. 9, 1962, abandoned. This application Dec. 14, 1970, Ser. No. 98,037
Int. Cl. C10l *1/32*
U.S. Cl. 44—51 **4 Claims**

A liquid fuel composition that has as its sole consituents, particulate coal and water. The particulate coal and water are mixed to form a homogeneous slurry that can be handled, stored, pumped and burned in substantially the same manner as conventional liquid fuels. The coal and water in the slurry have the relative proportions of between 54 and 69 per cent by volume coal and 46 to 31 per cent by volume water. The coal particles have a size distribution so that substantially all of the particles pass through a 4 mesh Tyler Standard Screen and between 18 and 33 per cent by weight pass through a 325

mesh Tyler Standard Screen. Less than 60 wieght per cent of the coal particles have a size that remains on a 28 mesh Tyler



Standard Screen and the remaining coal partilces have a size that passes through a 28 mesh Tyler Standard Screen and remains on a 325 mesh Tyler Standard Screen.

3,762,888

FUEL OIL COMPOSITION CONTAINING OIL-SOLUBLE POUR DEPRESSANT POLYMER AND AUXILIARY FLOW-IMPROVING COMPOUND

Alfred E. Kober, Piscataway, and Albert Rossi, Warren, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Nov. 16, 1970, Ser. No. 90,115
Int. Cl. C10l *1/18, 1/20*
U.S. Cl. 44—62 23 Claims

Cold flow properties of fuel oils are improved by addition thereto of certain oil-soluble, pour point depressant polymers together with non-nitrogen containing, oil-soluble, auxiliary, flow improving compounds.

3,762,889

DETERGENT MOTOR FUEL CONTAINING THE SALT REACTION PRODUCT OF A PARAFFINIC OIL OXIDATE AND A SUBSTITUTED UREA

Stanley R. Newman, Fishkill; Roy I. Yamamoto, and Ronald W. Von Allmen, both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 6, 1970, Ser. No. 87,600
Int. Cl. C10l *1/18, 1/22*
U.S. Cl. 44—66 6 Claims

Salt reaction product of a paraffinic oil oxide having a Neutralization Number from 55 to 80 and a Saponification Number from 100 to 200 and a substituted urea represented by the formula:

$$RN\text{—}(CH_2)_x\text{—}N\text{—}\overset{O}{\overset{\|}{C}}\text{—}N\text{—}(CH_2)_x\text{—}NR'$$

in which x has a value from 2 to 4 and R and R′ are hydrocarbyl radicals having from eight to 20 carbons, and a detergent motor fuel composition containing same.

3,762,890

STABILIZED POLYVALENT METAL SOAP COMPOSITION

Albert V. Collins, Fairview Park, Ohio, assignor to Mooney Chemicals, Inc., Cleveland, Ohio

Filed Feb. 28, 1972, Ser. No. 230,141
Int. Cl. C10l *1/18*
U.S. Cl. 44—66 7 Claims

A hydrocarbon solution of a hydrolizable manganese soap, by inclusion of propionic acid, in amounts of about 5 percent – 10 percent in the total solution for usual manganese content, is markedly stabilized against hydrolysis of the soap and from consequent precipitation of the metal content from solution, especially by stabilization against formation of an emulsion with water, and thereby is effectively preserved from hydrolysis; thus, for example, in the case of fuel oils preventing difficulties in pumping, or ultimately at the burner due to sputtering, which can result from emulsification and/or precipitation; with manganese neodecanoate solutions of varied manganese content, a propionic acid/manganese weight ratio of at least about 1.0.

3,762,891

AIR-FUEL RATIO DISTRIBUTION TO ENHANCE GASOLINE ENGINE OPERATION

Abraham A. Zimmerman, New Providence, Louis E. Furlong, Westfield, and Hugh F. Shannon, Scotch Plains, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Nov. 16, 1971, Ser. No. 199,303
Int. Cl. C10l *1/28*
U.S. Cl. 44—76 4 Claims

A silicone is added in a minor proportion to a nonleaded gasoline to improve the distribution of the air-fuel mixture in the induction system of an aspirated multicylinder gasoline engine, thereby increasing operating efficiency.

3,762,892

FUEL OIL SLUDGE DISPERSANT COMPOSITIONS

Alan Douglas Adams, Newark, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Dec. 24, 1970, Ser. No. 101,432
Int. Cl. C10l *1/26*
U.S. Cl. 44—72 8 Claims

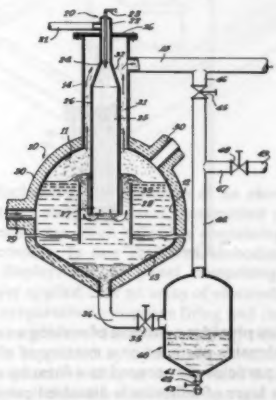
Sludges which normally form in fuel oils are maintained in a suspended state by the addition of a sludge dispersant comprising a mixture of monoethanol amine salts of dialkyl/monoalkyl orthophosphoric acid derived from aliphatic alcohols having from 10 – 20 carbon atoms.

3,762,893

SUBMERGED DIRECT CONTACT VAPORIZATION PROCESS

Lyle Vernon Larsen, Naperville, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Apr. 19, 1971, Ser. No. 135,197
Int. Cl. F17c *7/02*; F17d *1/04*
U.S. Cl. 48—190 7 Claims



Vaporizing a liquefied gas by feeding the hot products of combustion of a combustible material into and below the surface of a mass of the liquefied gas in a tank, said liquefied gas

being at a temperature at which at least water in the hot products of combustion is solidified, removing from the tank unsolidified products of combustion in admixture with the vaporized gas formed by heat exchange between the hot products of combustion and the liquefied gas and at least periodically removing from the tank solidified water.

3,762,894

ABRASIVE MEDIUM COMPRISING SHORT FIBERS IN THE SYNTHETIC RESIN BINDER

Rudolf Holzhauer, Marienheide/Rhld., Germany, assignor to Firma August Ruggeberg, Marienheide/Rhld., Germany

Filed Feb. 16, 1971, Ser. No. 115,164

Claims priority, application Germany, May 23, 1970, P 20 25 204.4

Int. Cl. C08g *51/12*; C08h *17/12*

U.S. Cl. 51—298 **11 Claims**

An abrasive medium including a layer of abrasive particles attached to a synthetic resin-impregnated fiberglass mat backing by a synthetic resin binder wherein either or both of said resins contain short fibers of about 0.003–0.012 mm. diam. and 0.1 to approx. 3 mm. length, the fibers being of glass, asbestos, ceramic material or graphite in an amount of between about 2–20 percent by weight based on the solid resin material.

3,762,895

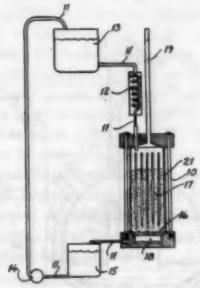
METHOD OF MAKING METAL BONDED ABRASIVES BY ELECTROLESS DEPOSITION

George Friis Keeleric, 35 Ballybane Rd., Merview, Galway, County Galway, Ireland

Filed May 7, 1971, Ser. No. 141,185

Int. Cl. C09c *1/68*; B24d *17/00*

U.S. Cl. 51—309 **7 Claims**



The invention provides a process of making an abrasive article whereby abrasive particles or a mixture of abrasive particles and filler particles are secured to a form by a layer of adhesive and the layer of adhesive is dissolved prior to securing the abrasive particles or the mixture of abrasive particles and filler particles to the form by a metallic bond. This is achieved by packing the form tightly in a container with packing particles prior to dissolving the adhesive.

3,762,896

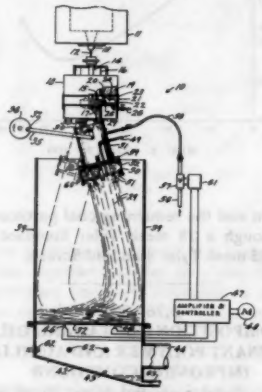
METHOD AND APPARATUS FOR PRODUCING FIBERS AND ENVIRONMENTAL CONTROL THEREFORE

John A. Borst, San Jose, Calif., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 23, 1971, Ser. No. 173,946

Int. Cl. C03b *37/04*

U.S. Cl. 65—3 **15 Claims**



An improved method and apparatus for effecting environmental control in apparatus for producing fibers coated with a binder. Heat softened material such as glass is centrifuged into primary filaments which are subsequently attenuated into fibers by means of a high velocity gaseous blast. A vaporizable medium is applied to fibers by spraying for cooling the fibers, binder is subsequently applied to the cooled fibers and the mass of binder coated fibers are collected on a conveyor. An air stream is passed downwardly through the collected mass and the conveyor to cool the mass and to remove excessive binder. The temperature of the air stream is sensed by a thermocouple to determine the temperature of the mass and the sensed temperature is used to control application of the vaporizable medium to maintain the mass at a substantially constant predetermined low temperature.

3,762,897

THERMOCHEMICAL CLEANING OF GLASS FABRICS

James R. Johnson, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Feb. 17, 1972, Ser. No. 227,243

Int. Cl. C03c *25/02, 21/00*

U.S. Cl. 65—3 **9 Claims**

A process for coronizing glass fabric or fibers to remove sizing and/or other thermally sensitive material therefrom and to whiten the glass fabric or fibers is disclosed, wherein the glass fabric or fibers are contacted with at least 0.02 percent by weight of at least one alkali metal azide salt, the thus-treated glass is heated to a temperature of 900° – 1,300° F, producing a cleaned glass fabric or fibers having improved cleanliness and/or tensile properties, compared to similar products treated in the same way but in the absence of the azide salt. The cleaned glass fabric or fibers may be coronized without drying same, while still retaining a substantial amount of the tensile properties thereof, which is a substantial improvement over prior art processes which generally require an intermediate drying step.

3,762,898
MANUFACTURE OF GLASS HAVING DESIRED SURFACE CHARACTERISTICS

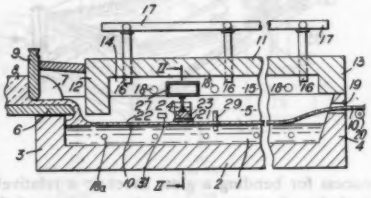
David Gordon Loukes, Eccleston Park, England, assignor to Pilkington Brothers Limited, Liverpool, England

Continuation-in-part of Ser. No. 174,258, Aug. 23, 1971, abandoned, which is a continuation of Ser. No. 872,928, Oct. 31, 1969, abandoned. This application Dec. 30, 1971, Ser. No. 214,483

Claims priority, application Great Britain, Nov. 18, 1968, 54,679/68

Int. Cl. C03c *15/00, 21/00;* B01d *59/40*

U.S. Cl. 65—30 8 Claims



The surface characteristics of glass, e.g., the tint, light transmission and heat rejection characteristics of float glass are modified by causing electrolytic migration of two metals into the glass surface in desired proportions from a body of molten alloy which is maintained to contact with the hot glass surface.

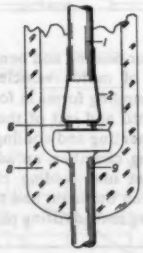
3,762,899
METHOD OF MANUFACTURING SEMICONDUCTOR COMPONENT

Georg Birgiechner, Mondsee, Austria, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm/Donau, Germany

Filed June 24, 1971, Ser. No. 156,243

Int. Cl. C03b *23/20*

U.S. Cl. 65—42 7 Claims



A method of manufacturing a semiconductor component includes the steps of applying a liquid insulating substance to an electrode, the insulating substance being selected such that a semiconductor element applied thereto adheres to the electrode, and pressing the electrode against a further electrode with the semiconductor element between them so that the semiconductor element is retained and electrically contacted by the two electrodes.

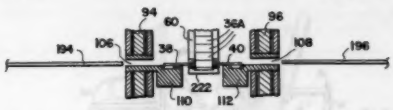
3,762,900
METHOD AND APPARATUS FOR MAKING INCANDESCENT LAMPS

Donald J. Belknap, Mountain Home, N.C., assignor to Nelson H. Shapiro, Rockville, Md. and Milton M. Field, Alexandria, Va., part interest to each

Filed May 28, 1971, Ser. No. 147,747

Int. Cl. C03c *27/02, 29/00*

U.S. Cl. 65—59 6 Claims



Axial-geometry incandescent lamps with accurately aligned, self-centering helical filaments are disclosed, the filaments having heavy end sections which are mechanically deformed to grip a helical center section. Tubular lamp envelopes have a glass center section and metal end sections heat-sealed thereto. Envelopes are produced in quantity by a machine having magazines loaded with envelope components, the components being automatically assembled and united by heat sealing. Envelopes of larger size may employ glass-beaded metal end sections formed before the end sections are assembled with the center section. Rotation of the envelope components while suspending the assembly from the end sections during heat sealing ensures seal uniformity and concentricity.

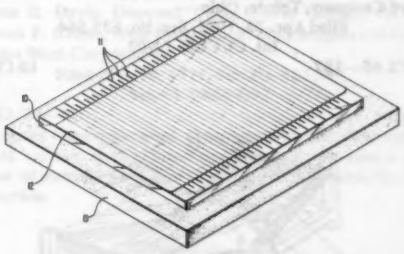
3,762,901
SUPPORTING A GLASS SUBSTRATE DURING ELECTRONIC DEVICE PREPARATION

Charles W. Salisbury, Risingsun; Jon D. Schepman, Sylvania, and Neil B. Nofziger, Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 856,653, Sept. 10, 1969, abandoned. This application Sept. 15, 1971, Ser. No. 180,929

Int. Cl. C03c *27/02*

U.S. Cl. 65—59 10 Claims



There is disclosed the preparation of an electronic device comprising a gas discharge panel constructed out of two or more glass substrates, each substrate containing at least one array of electrodes. In one preferred embodiment, there is prepared a display/memory panel comprising a dielectric coating or layer applied over an array of electrodes.

The panel preparation comprises firing and curing the electrode (with or without a dielectric coating) onto a glass substrate which is supported by a base plate which maintains its surface flatness and lubricity at the elevated firing and curing temperatures such that the relative flatness and smoothness of the glass substrate (and any dielectric coating fired thereon) are enhanced and the uniformity of the panel spacing is improved. The base plate is typically prepared from a refractory or ceramic-like material.

3,762,902

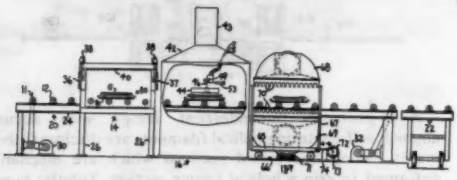
SHAPING, COATING AND TEMPERING GLASS

William E. Wagner, Verona, and James S. Golightly, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 123,391, March 11, 1971, abandoned, which is a continuation of Ser. No. 852,788, Aug. 25, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 246,902

Int. Cl. C03b 23/02; C03c 17/04

U.S. Cl. 65—60 26 Claims



Shaping, coating and tempering glass sheets in a continuous process comprising supporting a glass sheet in bending relation to a mold, heating the sheet in an enclosed atmosphere until it conforms to the mold, coating at least a surface of the bent sheet while so supported by applying a coating composition for a time sufficient to produce a coating thereon and while exposing its other surface to a cool atmosphere, discontinuing the coating before the glass temperature falls below the strain point, and then quenching both surfaces of the sheet rapidly with relatively cold tempering medium to impart at least a partial temper to the bent coated glass sheet before removing the sheet from the supporting mold. The temperature treatment can also simultaneously fuse a metalo-ceramic frit applied to a portion of the coated surface before said heating starts.

3,762,903

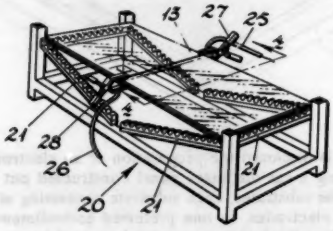
PROCESS FOR BENDING GLASS TO A RELATIVELY SHARP ANGLE

Harold E. Hamilton, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Apr. 20, 1971, Ser. No. 135,564

Int. Cl. C03b 23/02

U.S. Cl. 65—107 10 Claims



A process for bending a glass sheet or a pair of glass sheets to a relatively sharp angle which comprises forming an electrically conducting path on the sheet along a line about which it is desired to bend the sheet, and passing an electric current through the path to heat the sheet adjacent the path to a temperature above the bending point of the glass. The sheet is then caused to be bent along the electrically conducting path to form a generally V-shaped glazing.

3,762,904

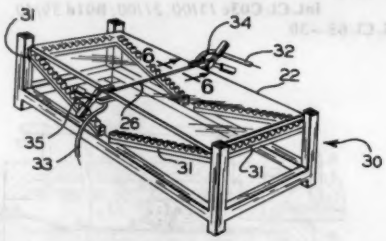
PROCESS FOR BENIDNG A GLASS SHEET TO A RELATIVELY SHARP ANGLE

Harold E. Hamilton; Robert P. Bamford, both of Toledo, and Paul V. Pastorek, Rossford, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Continuation-in-part of Ser. No. 135,564, April 20, 1971. This application Aug. 23, 1972, Ser. No. 283,076

Int. Cl. C03b 23/02

U.S. Cl. 65—107 7 Claims



A process for bending a glass sheet to a relatively sharp angle including forming a groove in a surface of the sheet along a line about which it is desired to bend the sheet, forming an electrically conducting path on the sheet, and passing an electric current through the path to heat the sheet in the area of the groove to a temperature above the bending point of the glass. The sheet is then caused to be bent along the groove to form a generally V-shaped glazing.

3,762,905

FURNACE FOR HEATING AND BENDING GLASS PLATES FOR WINDSHIELDS AND THE LIKE

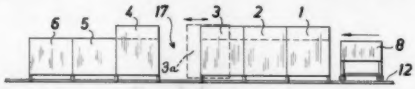
Arvi Artama, and Erkki Artama, both of Laukontori 4 C, Tampere, Finland

Continuation-in-part of Ser. No. 64,432, Aug. 17, 1970, Pat. No. 3,697,243. This application Aug. 10, 1971, Ser. No. 170,547

Claims priority, application Finland, Aug. 11, 1970, 2196/70

Int. Cl. C03b 27/00

U.S. Cl. 65—273 5 Claims



Improved furnace for heating and bending glass plates, particularly windshields of motor vehicles, wherein the glass plates are loaded on bending forms in form carriers which are moved successively into and out of the furnace, comprising successive stationary heating and cooling chambers, including at least one preheating chamber, an adjoining main heating chamber, and at least one cooling chamber, there being formed a space between the main and the successive cooling chamber for controlling and adjusting purposes.

3,762,906

PRESSURIZED FLUID RAM ACCELERATION SYSTEM

Frederick A. Dahlman, and Raymond J. Mras, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

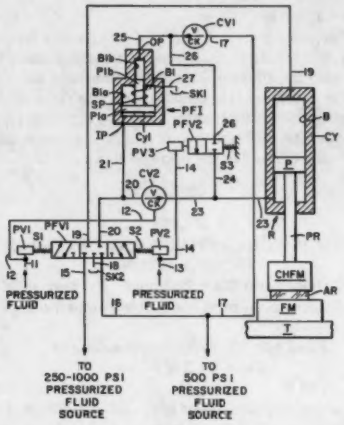
Filed Aug. 4, 1972, Ser. No. 278,040

Int. Cl. C03b ; F15b 7/00; B30b 1/32

U.S. Cl. 65—160 8 Claims

A system for rapid acceleration of a pressurized fluid actuated ram from a condition of rest to a condition of linear motion. A pressurized fluid intensifier is used in the system to, at

times enable rapidly overcoming the static friction and inertia of a ram and its associated apparatus and rapidly accelerate the ram and apparatus to a desired velocity. The system is, for example, especially adaptable to operations, such as glass pressing operations, in which a ram is used to actuate a relatively massive pressing plunger to press form a relatively large article in or on a cooperative mold member.



3,762,907

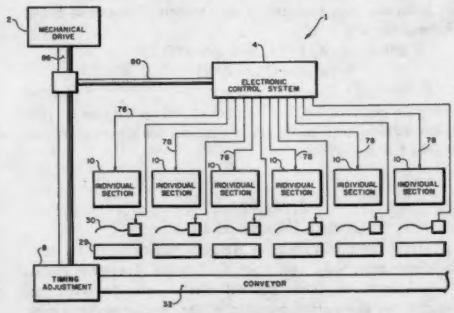
GLASS FORMING MACHINE HAVING AN AUTOMATIC CONTROL SYSTEM

Richard M. Quinn, and Jerome A. Kwiatkowski, both of Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Feb. 22, 1971, Ser. No. 117,586

Int. Cl. C03b 7/00

U.S. Cl. 65—164 **30 Claims**



A glass forming machine having an electronic control system for effecting automatic synchronous operation of the various sections thereof, all of which are fed by a common gob feeding means to thereby automatically and continuously form hollow glass articles.

3,762,908

FLOATGLASS PROCESSING EQUIPMENT

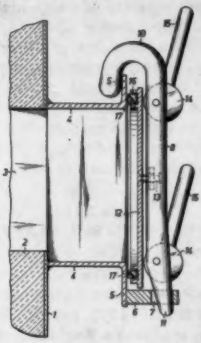
Gunter Labrot, Porz, and Karl Kaes, Porz-Wahn, both of Germany, assignors to Erste Deutsche Floatglas, GmbH & Co. OHG, Porz, Germany

Filed Nov. 25, 1969, Ser. No. 879,856

Claims priority, application Germany, Aug. 2, 1968, P 19 39 383.0

Int. Cl. C03b 5/16

U.S. Cl. 65—158 **3 Claims**



The specification describes a closure in the wall of a float glass producing plant. The closure comprises a tubular ring extending from the wall in an outward direction, a lid placed over the outer end of the ring, holding means engaging projections on the outer end of the ring, and clamping means mounted on the holding means for holding the lid against the end of the ring.

3,762,909

PHOSPHORUS-BORATE GLASS FRITS AS PLANT MICRO NUTRIENT CARRIERS

William R. Davie, Hopewell Twp., Beaver County, Pa., and Lonzo F. Green, West Palm Beach, Fla., assignors to United States Steel Corporation

Filed June 10, 1971, Ser. No. 151,947

Int. Cl. C05d 9/02

U.S. Cl. 71—1 **6 Claims**

Vitreous compositions of phosphorus-borate glass and oxides of various metals fused and adapted to cause a slow release of nutrient materials to plants and a process for their production.

3,762,910

METHOD OF MAKING NUTRIENT PROMOTING CULTURE

Harold Durrell, Decatur, Ill., assignor to Henry Peterson, Cincinnati, Ohio, a part interest

Continuation-in-part of Ser. No. 33,907, May 1, 1970, abandoned. This application Jan. 5, 1972, Ser. No. 215,636

Int. Cl. C05f 11/00

U.S. Cl. 71—23 **6 Claims**

This invention covers a process for making a nutrient-promoting culture or soil conditioner for application to natural soil and other media employed in agricultural and horticultural operations by utilizing a controlled sequence of natural organic reactions involved in the process of reduction of plant foliage to a nutrient-promoting culture.

3,762,911

METHOD OF REFINING SCRAP, ESPECIALLY OF COPPER-NICKEL ALLOY

Gerhard von der Crone, and Horst Fricke, both of Altena, Germany, assignors to Vereinigte Deutsche Metallwerke AG, Frankfurt am Main, Germany

Filed May 14, 1971, Ser. No. 143,399

Claims priority, application Germany, May 19, 1970, P 20 24 302.1

Int. Cl. C22b 7/00; C21c 1/04; C22b 25/06

U.S. Cl. 75—63 8 Claims

A method of refining scrap of a high-melting-point metal alloy, especially a copper-nickel alloy, in which the scrap is heated in vacuo to a temperature lower than the smelting point of the scrap, at which impurities, e.g. lead, tin and zinc, or compounds of these elements, especially their oxides, on the surface of the scrap have a vapor pressure sufficient to cause vaporization of the impurities. The thus purified metal may be smelted for further refining or alloying, or casting into ingots without further treatment.

3,762,912

REFINING PROCESS AND APPARATUS

Jean-Marie Jacquerie, Seraing; Georges Jean-Pierre Hubert Defosse, Wandre, and Pierre-Paul Lams, Embourg, all of Belgium, assignors to Elphiac, Charleroi, Belgium

Filed Jan. 13, 1971, Ser. No. 106,027

Claims priority, application Belgium, Jan. 14, 1970, 83841; July 8, 1970, 91345

Int. Cl. C22b 9/00; H05b 7/10, 5/00

U.S. Cl. 75—65 ZM 8 Claims

A process and an apparatus for refining a product placed in a trough member and in which at least one molten zone created in the product is displaced through the trough and in which the molten zones are obtained by means of induction heating through one or plural successive coils fed by in phase currents oriented in such a way that the magnetic fields between two successive coils are opposite to each other. The process is characterized in that the trough is supported on one or plural metallic rails which are water-cooled and tensioned in the longitudinal direction by elastic means, in that the induction coils are placed around the trough and the rails and are displaced along the axis of the trough, and in that the coils are connected to an alternating current generator of intermediate frequency. The apparatus comprises a support for supporting the trough containing the product to be refined and the heating equipment, small rails secured to such support and supporting the trough, elastic means mounted on the support for tensioning the rails in the longitudinal direction, a guide secured to the support and supporting a mobile carriage, an inductor comprising at least one induction coil secured to the carriage and surrounding the trough, and an alternating current generator of intermediate frequency connected to the coil of the inductor.

3,762,913

ALLOY AND METHOD OF WELDING STRUCTURES INCLUDING THIS ALLOY

Eugene S. Boyko, Monroeville, and Clark M. Owens, Irwin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 17, 1967, Ser. No. 611,533

Int. Cl. C22c 39/02, 39/20

U.S. Cl. 75—122 1 Claim

An iron-nickel-chromium alloy with which crack-free sound welds are produced for fuel elements and tube-to-tube sheet assemblies having low carbon (0.05 max) and up to 0.40 each of titanium and aluminum, the Ti being eight to 10 times the carbon and the aluminum four to six times the carbon. The Ti and/or Al suppress the formation of massive $Cr_{23}C_6$ molecules.

Also a method of welding iron-nickel-chromium alloy in which Ti and/or Al are present to prevent cracks from forming.

3,762,914

MODIFIERS FOR IRON-CARBON ALLOYS

Mikhail Vasilievich Voloschenko, ulitsa Kapitanovskaya, 4, kv. 25, Kiev, U.S.S.R.

Filed July 9, 1970, Ser. No. 53,673

Int. Cl. C22c 31/00

U.S. Cl. 75—130 AB 10 Claims

A modifier, based on calcium and silicon, for iron-carbon alloys, also comprising magnesium, rare earth metals, barium, strontium, yttrium, lithium scandium, rubidium, not counting occasional or indispensable constituents, the ratio of the constituents being chosen so, that the modifier can with equal success be applied to both cast-irons and steels, no nonmetallic impurities being formed in the body of metal.

3,762,915

METHOD FOR CASTING GRAY CAST IRON COMPOSITION

Richard W. Heine, and Carl R. Loper, Jr., both of Madison, Wis., assignors to Alumni Research Foundation, Madison, Wis.

Filed July 27, 1970, Ser. No. 58,334

Int. Cl. C22c 37/04

U.S. Cl. 75—130 R 4 Claims

The preparation of castings of gray cast iron having reduced chill and hard spots without increased shrinkage holes in which the composition is formulated to contain a metal component such as tellurium, selenium, bismuth or Misch-metal, preferably in combination with titanium, to carry the metal to a liquid portion below the eutectic arrest.

3,762,916

ALUMINUM BASE ALLOYS

Ivor Kirman, Birmingham, England, assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 42,481, June 1, 1970, abandoned. This application July 10, 1972, Ser. No. 270,254

Int. Cl. C22c 21/00

U.S. Cl. 75—141 16 Claims

Wrought aluminum base alloys having high strength and improved toughness. The alloys consist essentially of zinc from 4 to 9 percent, magnesium from 1 to 4 percent, zirconium from 0.05 to 0.40 percent, copper from 0.5 to 3.5 percent, boron from 0.01 to 0.05 percent and the balance essentially aluminum.

3,762,917

ALLOY FOR DENTAL AMALGAM

Lewis B. Johnson, Jr., University of Virginia, Thornton Hall, Charlottesville, Va.

Filed July 6, 1971, Ser. No. 160,208

Int. Cl. C22c 7/00

U.S. Cl. 75—169 3 Claims

The alloy 26 percent Sn, 8–10 percent Au and Ag qs to 100 percent, on mixing with mercury, forms an amalgam particularly suitable for dental use.

3,762,918

COBALT-BASE ALLOY

Robert L. Dreshfield, Middleburg Heights, Ohio; Gary D. Sandrock, Ringwood, N.J., and John C. Freche, Fairview Park, Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 26, 1972, Ser. No. 221,093

Int. Cl. C22c 19/00

U.S. Cl. 75—170 5 Claims

Cobalt-tungsten alloys containing titanium, zirconium, carbon, chromium, rhenium, iron and nickel in preferred weight percentage ranges have superior strengths at elevated temperatures.

3,762,919

TITANIUM CARBIDE-NICKEL COMPOSITION PROCESS

Alma U. Daniels, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 828,699, May 28, 1969, Pat. No. 3,674,443. This application Feb. 28, 1972, Ser. No. 230,070

Int. Cl. B22f 3/16

U.S. Cl. 75—204 4 Claims

Dense, homogeneous compositions having (a) a density in excess of 95 percent of theoretical and (b) an average grain size less than 10 microns and consisting of:

1. 80–97 percent by volume of titanium carbide and
2. 3–20 percent by volume of nickel, the nickel being present mainly as a binder phase uniformly distributed at the grain boundaries, are useful as cutting edges for cutting tools.

3,762,920

REDUCTION OF ORES

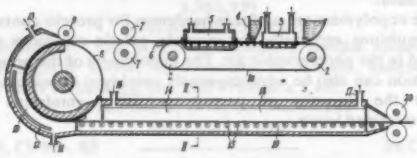
Alfred Richard Eric Singer, and David Anthony Roberts, both of c/o Department of Metallurgy, University of Swansea, Singleton Park, Swansea, Glamorganshire, Wales

Filed Apr. 8, 1970, Ser. No. 26,704

Claims priority, application Great Britain, Apr. 15, 1969, 19,172/69; Oct. 15, 1969, 50,688/69

Int. Cl. B22f 3/18

U.S. Cl. 75—208 R 15 Claims



Metal products of thin section are produced by chemical reduction of a compact containing an oxide or other reducible compound of the metal which is passed into a furnace in which it is reduced and sintered. The composition of the compact at least at a surface layer is such that the compact is sufficiently self-supporting to be passed through the furnace with additional support, at most, over only part of its surface. Preferably the compact contains a binder whereby it is self-supporting throughout its mass.

Best results are obtained by forming on one surface of the compact a metal layer either by reduction in situ or by the addition of a layer of the elementary metal. Sintering of this metal layer provides a strengthened skin which acts as a support to the rest of the compact during the final reduction and sintering operation. The technique is particularly applicable to production of metal strip e.g. by reduction of an iron oxide.

3,762,921

PHOTOGRAPHIC COLOUR MATERIAL

Hector Alfons Vanden Eynde, Edegem; Raphael Karel Van Poucke, Berchem; Arthur Henri De Cat, Mortsel, and Gaston Jacob Benoy, Edegem, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

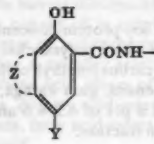
Filed Feb. 8, 1971, Ser. No. 113,647

Claims priority, application Belgium, Feb. 24, 1970, 8839

Int. Cl. G03c 7/00

U.S. Cl. 96—55 9 Claims

Light-sensitive silver halide color emulsions are described which comprise a cyan-forming color coupler of the formula :



wherein :

Z represents the atoms necessary to close a fused-on benzene or tetrahydrobenzene ring,

Y represents hydrogen or a substituent conferring to the color coupler a 2-equivalent character,

R_1 represents a straight-chain C_1–C_5 alkyl group or an aryl group with electron-withdrawing substituent,

R_2 represents a straight-chain C_1–C_5 alkyl group, or R_2 together with R_1 represents the atoms necessary to close a cycloaliphatic ring, and

R_3 stands for a diffusion-fast making straight-chain acyclic aliphatic hydrocarbon group comprising from 10 to about 20 C-atoms or for a residue substituted by a diffusion-fast making acyclic aliphatic hydrocarbon group having from 10 to about 20 C-atoms, or R_3 together with R_1 represents the atoms necessary to complete a diffusion fast making cycloaliphatic hydrocarbon group which comprises in the ring or together with the C-atoms of an alkyl substituent on the ring at least 12 C-atoms. Upon exposure and color development, cyan dyestuff images are formed in the described emulsions which have favorable spectral properties and a high stability against heat.

3,762,922

SILVER HALIDE PHOTOGRAPHIC IMAGES

Laszlo Lugosy, Frankfurt; Mario Grossa, and Wolfgang Pistor, both of Neu-Isenburg, all of Germany, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 31, 1971, Ser. No. 129,989

Int. Cl. G03c 7/16, 7/00

U.S. Cl. 96—56 10 Claims

The image quality of photographic pictures containing, in addition to a silver image, a dye image resulting from developer, is improved by treatment with an alkaline solution containing a heavy metal complex.

3,762,923

METHOD FOR PROCESSING BLACK-AND WHITE PHOTOGRAPHIC SILVER HALIDEMATERIAL

Mitsunori Sugiyama; Shoji Ishiguro; Nobuo Sugiyama; Haruhiko Iwano, and Yoo Iijima, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 16, 1971, Ser. No. 124,942

Claims priority, application Japan, Mar. 16, 1970, 45/22178

Int. Cl. G03c 5/24, 5/30, 5/26

U.S. Cl. 96—63 14 Claims

A method for processing black-and-white negative photographic silver halide materials which comprises (a) developing the exposed black-and-wite photographic material, (b) bleaching said photographic material without oxidizing and dissolving the silver in a bleaching solution, and (c) subsequently developing said photographic material again with a black-and-white developer.

3,762,924

PHOTOGRAPHIC GELATINOUS COATING COMPOSITION

Eiji Morii, Nagoya-shi; Kazuya Furuya, Tokyo; Shui Sato, Tokyo, and Yasuo Wakabayashi, Tokyo, all of Japan, assignors to Konishinoku Photo Industry Co. Ltd., Tokyo, Japan

Filed Jan. 30, 1968, Ser. No. 701,549

Claims priority, application Japan, Feb. 6, 1967, 42/7193

Int. Cl. G03c 1/02

U.S. Cl. 96—94 7 Claims

It has been found that photographic gelatinous silver halide emulsions containing dextran sulfate or carboxyalkyl dextran sulfate have increased covering power as well as improved maximum density and contrast.

3,762,925
METHOD OF INCORPORATING PHOTOGRAPHIC ADJUVANTS INTO HYDROPHILIC COLLOIDS

Fritz Nittel, Cologne Stammheim, Germany; Robert Joseph Pollet, Vremde, and Raphael K. Van Poucke, Berchem, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

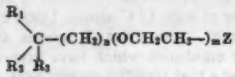
Filed June 7, 1971, Ser. No. 150,434

Claims priority, application Great Britain, Aug. 13, 1970, 39,115/70

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **11 Claims**

A photographic chemical compound in incorporated into a hydrophilic colloid composition by dispersing a solution of the chemical compound in the hydrophilic colloid composition in the presence of a surface active compound of the formula :



wherein :

n is 0 or 1 and m is 0 to 30,

R_2 is hydrogen or when n is 1 may be alkyl,

R_2 and R_3 stand for straight-chain or branched-chain alkyl groups or together are the atoms necessary to complete an alicyclic ring structure, R_1 and R_2 comprising at least eight C-atoms, and

Z is a group $—SO_3M$, $—OSO_3M$, $—OCOXSO_3M$ or —Y—A—SO_3M wherein

M is hydrogen, alkali metal, ammonium or organic ammonium

X is alkylene, aralkylene or arylene,

Y is oxygen or sulphur, and

A is alkylene or aralkylene.

The colloid composition can be a light-sensitive silver halide emulsion or a non-light-sensitive water-permeable colloid composition.

3,762,926
GELATINO SILVER HALIDE EMULSION CONTAINING A TRIMESIC ALDEHYDE HARDENING AGENT

Wolfgang Himmelmann, Opladen; Ernst Roos, Cologne, and Johannes Sobel, Leverkusen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 5, 1971, Ser. No. 104,132

Claims priority, application Germany, Jan. 17, 1970, P 20 02 063.7

Int. Cl. G03c *1/30*

U.S. Cl. 96—111 **3 Claims**

Trimesic aldehydes, which are substituted in the 2-,4- and 6-position with chlorine, hydroxy or methoxy, as well as hexamethyl acetals and bisulfite addition products of such aldehydes are useful for hardening gelatin layers especially photographic gelatin layers. The hardening effect is developed by rendering alkaline the gelatin that contains any of these aldehydes.

3,762,927
SILVER HALIDE EMULSION CONTAINING A NON-MIGRATORY HARDENER

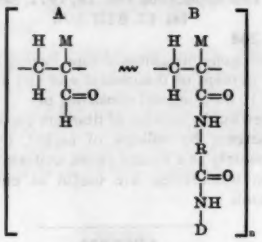
Howard C. Haas, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 862,929, Oct. 1, 1969, abandoned. This application Sept. 30, 1971, Ser. No. 185,433

Int. Cl. G03c *1/30*

U.S. Cl. 96—111 **3 Claims**

A copolymer soluble in aqueous and/or partially aqueous solution and having a chain comprising the entities A and B defined below:



wherein:

M is hydrogen or methyl;

R is an alkylene group comprising less than six carbon atoms or a substituted alkylene group;

each D is hydrogen, methyl or ethyl; and

n is the total number of A and B residues in the polymer chain.

The copolymers are useful as hardeners for protein-containing emulsions, especially, for example, gelatin emulsions employed in the photographic art. The copolymers of the present invention can also be advantageously employed to selectively adjust the viscosity of protein-containing emulsions to predetermined levels.

3,762,928
HYDROPHILIC FILM-FORMING COLLOID COMPOSITION

Jozef Frans Willems, Wilrijk, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Filed May 10, 1971, Ser. No. 141,994

Claims priority, application Great Britain, May 14, 1970, 23,431/70

Int. Cl. G03c *1/38, 5/26, 1/76*

U.S. Cl. 96—114.5 **8 Claims**

Coating compositions are described which comprise a hydrophilic colloid and an ester of the sulphonate derivative of an unsaturated polycarboxylic acid material comprising more than three carboxylic acid equivalents with at least one non-ionic surface active hydroxy compound, at least one of the carboxylic acid groups being stronly with the said non-ionic surface active compound and the remaining unesterified carboxylic acid groups being in acid form, in salt form or esterified with one or more compounds containing hydroxy group(s). These coating compositions are particularly useful in the formation of photographic silver halide elements. The layers coated from these compositions show a reduced formation of comets or repellency spots and can be overcoated easily with other hydrophilic colloid layers.

3,762,929
METHOD OF MAKING A SOY PROTEIN CONCENTRATE

Darwin Fiske DeLapp, New Canaan, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 21, 1971, Ser. No. 191,471

Int. Cl. A23j *3/00*

U.S. Cl. 99—17 **2 Claims**

A method of making a soy protein concentrate wherein soy bean flakes are contacted with a polysaccharide selected from the group consisting of carboxymethyl cellulose, guar gum, sodium alginate, carrageenans, gum karaga, alginic acid and agar and excess water at a pH of 4.2-4.6 and recovering the resultant insoluble protein fraction.

3,762,930

MECHANICAL PRESSURE ROASTING OF COFFEE

James P. Mahlmann, Wayne, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Filed Apr. 16, 1971, Ser. No. 134,867
Int. Cl. A23f *1/02*
U.S. Cl. 99—68 24 Claims

Green coffee either whole, flaked or ground is subjected to heat and a mechanical force preferably containing a shearing component sufficient to roast the coffee. The roasting produces a roasted coffee product having higher soluble solids whether atmospherically or pressure extracted compared to a conventional hot air roasts. The increased soluble solids content provides regular coffee wherein substantial reductions in the amount of coffee employed to prepare a brew are possible and in addition provides a soluble percolate of higher concentrations and at better yield in the manufacture of soluble coffee. The mechanical pressure roasting further provides improved controllable acidity but not in the order of that obtained by pressure roasting in the presence of large excesses of steam. The mechanical pressure roasting of coffee has been found to upgrade the flavor of Robusta-type coffees by removing typically tarry notes.

3,762,931

MACARONI PROCESS

Theodore W. Craig, Lafayette; Richard G. Henika, Alamo, and William H. Hoyer, San Francisco, all of Calif., assignors to Patent Technology, Inc., San Francisco, Calif.

Filed Dec. 2, 1970, Ser. No. 94,292
Int. Cl. A23l *1/16*
U.S. Cl. 99—85 16 Claims

An improved process for making macaroni products (alimentary pastes including vermicelli, spaghetti, noodles, macaroni, etc.) involving the steps of mixing essential paste forming ingredients including semolina and water with one or more paste modifying agents from the group of whey solids and edible sulfhydryl reducing substances (cysteine, glutathione and sulfite salts). Mixing and extrusion of the paste to form desired macaroni products is more easily accomplished in the presence of the indicated paste modifying agents, and can be accomplished with substantially reduced amounts of process water. The extruded products are characterized by reduced moisture content, improved surface characteristics, and substantially decreased drying requirements (time and energy). The improved characteristics of the extruded products permit use, as is (in canning or wet packaging operations), or, alternatively, drying and packaging in substantially reduced periods of time.

3,762,932

BAKERY PRODUCTS CONTAINING EMULSIFICATION AND IMPROVING AGENTS

Bruce D. Buddemeyer, Overland Park, Kans., and John R. Moneymaker, Kansas City, Mo., assignors to The Paniplus Company, Kansas City, Mo.

Continuation of Ser. No. 379,341, June 30, 1964, abandoned. This application June 21, 1967, Ser. No. 647,877
Int. Cl. A21d *13/08*
U.S. Cl. 99—92 8 Claims

Bakery products having incorporated therein an emulsification agent which consist of in combination (1) a non-toxic mono aliphatic ester of a dicarboxylic acid, and (2) a composition comprising a member selected from the group consisting of mono-fatty acid esters of aliphatic polyhydric alcohol compounds, di-fatty acid esters of aliphatic polyhydric alcohol compounds, fatty acid esters of citric and lactic acids, and mixtures thereof.

3,762,933

STABILIZED EDIBLE OIL AND FAT COMPOSITIONS CONTAINING OIL OF TEMPEH

Paul Gyorgy, 201 Curwen Rd., Rosemont, Pa.

Filed June 21, 1971, Ser. No. 155,252
Int. Cl. A23d *5/04*
U.S. Cl. 99—163 9 Claims

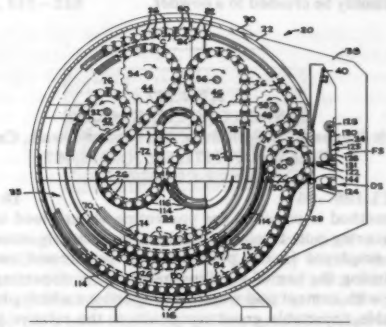
Tempeh and components thereof, such as oil of tempeh, an extract of tempeh, are useful as stabilizers for food compositions, particularly edible fats and oils. An edible fat or oil containing tempeh or oil of tempeh or a component of oil of tempeh exhibits improved anti-oxidative properties and stability.

3,762,934

REPETITIVE HEAT TREATMENT AT SPEEDS HIGHER THAN FEEDING

James L. Reimers, San Jose, Calif.

Division of Ser. No. 787,647, Dec. 30, 1968, Pat. No. 3,613,551. This application Dec. 8, 1970, Ser. No. 96,195
Int. Cl. A23l *3/02*; B65b *55/02*
U.S. Cl. 99—182 5 Claims



Food processing method for cooking rows of filled containers within a cylindrical pressure housing and for supporting the containers in elongated carriers of an endless processing conveyor. The conveyor is trained around a multiplicity of drive sprockets near the upper portion of the housing and is draped therefrom and guided along a plurality of looped paths below the drive sprockets as well as along an arcuate path above the sprockets to more fully utilize the holding capacity of the housing. The plurality of drive sprockets are arranged to cause a plurality of direction changes and to permit the conveyor to be driven at high speeds during processing thereby agitating the contents of the containers to affect more efficient heat transfer. Additional agitation may be imparted to the containers by permitting them to project downwardly from the carriers against curved retaining plates during a portion of their travel through the cooker. The cooker also includes an improved feed and discharge mechanism for feeding rows of containers into and discharging rows of containers from the housing of the pressure cooker through one end thereof.

3,762,935

FOAMED CERAMIC MATERIAL

Sam L. Leach, 32653 Seagate Dr., Palos Verdes Peninsula, Calif.

Filed Sept. 29, 1971, Ser. No. 184,935
Int. Cl. C04b *21/00*
U.S. Cl. 106—40 R 10 Claims

A foamed-in-place shaped article having high dimensional stability at extremes of heat and cold, good insulating properties, and high tensile strength, a composition for making the same, and the method thereof are disclosed. The composition

contains aluminum oxide,a glass frit, bentonite, and phosphoric acid. Optional ingredients are aluminum hydroxide and a metal powder above hydrogen in the electromotive force series. The composition is charged to a mold and allowed to foam-in-place, and then is cured at a relatively low temperature.

3,762,936

MANUFACTURE OF BOROSILICATE GLASS POWDER ESSENTIALLY FREE OF ALKALI AND ALKALINE EARTH METALS

Ralph K. Iler, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 657,042, July 31, 1967, abandoned. This application Feb. 2, 1971, Ser. No. 112,007

Int. Cl. C03c *3/08, 3/04*

U.S. Cl. 106—54 **5 Claims**

An intimate mixture of a boric oxide source compound and colloidally subdivided amorphous silica is slowly heated to evolve all moisture and boric oxide source decomposition products. The mixture is then heated to a final temperature between 500° and 900° C. to form a borosilicate glass powder directly, or to form a borosilicate glass agglomerate which may readily be crushed to a powder.

3,762,937

TENDON GROUTING MEANS

Morris Schupack, 37 Split Rock Rd., South Norwalk, Conn.

Filed Sept. 7, 1971, Ser. No. 178,487

Int. Cl. C04b *7/02*

U.S. Cl. 106—90 **10 Claims**

A method is provided for preventing water bleed in grout for securing post-tensioned tendons, particularly strand tendons employed in the production of prestressed concrete, comprising the use of a gelling agent and a dispersing agent along with cement and water in proportions which provide a pourable, injectable grout composition, the relative proportions of ingredients being selected such that water bleed is controlled or substantially eliminated at pressures less than about 10 psig, at 80 psig, less than 10 percent water loss occurs. The composition preferably contains an expansion agent resulting in positive expansion as required by the specific circumstances of usage. The composition is capable of reducing water bleed to 0 percent at 80 psig differential pressure.

3,762,938

DEPOSITION OF THIN METAL FILMS

Richard E. Ridenour, and Kenneth O. Groves, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 783,164, Dec. 6, 1968, abandoned. This application Mar. 29, 1971, Ser. No. 129,204

Int. Cl. C23c *3/04, 17/02*

U.S. Cl. 117—63 **22 Claims**

An electroless process for depositing elemental metallic coatings on solid substrates. The process comprises forming a hydride of the primary metal to be deposited in situ on a substrate and subjecting the metal hydride to sufficient energy to deposit the elemental form of the metal on the substrate.

3,762,939

METHOD OF PROTECTING A METALLIC SURFACE FROM CORROSION AND RESULTANT ARTICLE

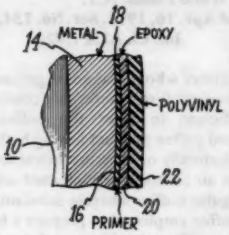
Richard F. Hunter, Hickory, N.C., assignor to General Electric Company

Filed July 2, 1971, Ser. No. 159,409

Int. Cl. B32b *15/08*; **H01f** *27/02*

U.S. Cl. 117—75 **4 Claims**

A corrosion protection system for metal. The metal surface to be protected is first cleaned of dirt, grease and the like, preferably by grit blasting. The cleaned surface is then coated first with a primer to promote adhesion between the metal and the basic protection coating. A protective top coat, preferably



an epoxy, is applied over the primer either by spraying or fluid bed. Finally, an impact resistant over coat is applied over the epoxy top coat preferably by spraying to prevent damage to the top coat during handling.

3,762,940

HEXA(ALKOXYMETHYL)MELAMINE-MODIFIED HYDROXYLATED FLUOROPLYMER COATED ARTICLES

Max F. Bechtold, Kennett Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 784,648, Dec. 18, 1968, Pat. No. 3,651,000. This application Sept. 9, 1971, Ser. No. 179,116

Int. Cl. B32b *15/08, 27/08*

U.S. Cl. 117—76 F **7 Claims**

Described and claimed are combinations of certain hydroxylated fluoropolymers and hexa(alkoxymethyl)melamines, both in the form of crosslinkable liquid mixtures and in the form of scratch-resistant, strongly adherent cross-linked coatings, methods of applying the coatings from the liquid mixtures, and solid objects, especially plastic objects, carrying the coatings.

3,762,941

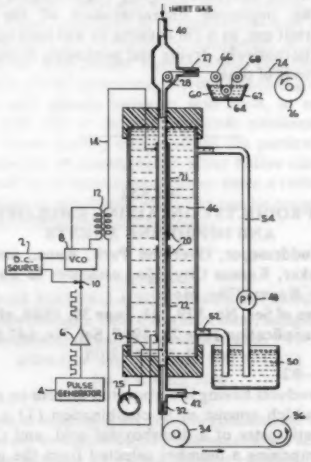
MODIFICATION OF CARBON FIBER SURFACE CHARACTERISTICS

Kenneth C. Hou, Whippany, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed May 12, 1971, Ser. No. 142,656

Int. Cl. C08f *1/22, 5/00*

U.S. Cl. 117—93.1 CD **21 Claims**



A process is provided for modifying the surface characteristics of a carbonaceous fibrous material (i.e., either

amorphous carbon or graphitic carbon) and to thereby facilitate enhanced adhesion between the carbonaceous fibrous material and a matrix material. The carbonaceous fibrous material is coated with a compact polyphenylene polymer coating which is deposited thereon upon contact with an excited gas species generated by applying high frequency electrical energy in pulsed form to an inert gas in the presence of at least one aromatic compound. The coating step is efficiently conducted at a temperature of about 0 to 150° C. and at a pressure within the coating zone of about 1 to 3 atmospheres. Composite articles of enhanced interlaminar shear strength may be formed by incorporating the fibers modified in accordance with the present process in a resinous matrix material.

3,762,942

METHOD OF FLAME PROOFING CARPETS

Robert C. Putnam, Mountain Lakes, N.J., and Jeffrey W. Young, Norristown, Pa., assignors to Polaris Chemical Corp., Manville, N.J.

Division of Ser. No. 45,887, June 12, 1970, Pat. No. 3,676,389. This application Apr. 19, 1972, Ser. No. 245,672

Int. Cl. C09k *3/28*; C09d *5/18*

U.S. Cl. 117—137 **16 Claims**

A novel method for flame proofing a carpet is disclosed which is based on the use of an aqueous composition that contains a foaming agent; a mixture of urea or thiourea and a polyhalo (Br, Cl) propanol ester of phosphoric, phosphoramidic or mixtures thereof; a water-soluble amineal-dehyde resin, and an acid generating catalyst.

3,762,943

PROCEDURE AND PREPARATION FOR THE PRODUCTION OF HOMOGENEOUS AND PLANE PARALLEL EPITACTIC GROWTH LAYERS OF SEMICONDUCTING COMPOUNDS BY MELT EPITAXY

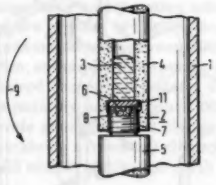
Gunter Winstel, and Peter Jochen, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Erlangen, Germany

Filed July 13, 1970, Ser. No. 54,280

Claims priority, application Germany, July 17, 1969, P 19 36 443.3

Int. Cl. H01l *7/56*

U.S. Cl. 117—201 **12 Claims**



Process and apparatus for preparing doped plane parallel epitactic growth layers of semiconducting compounds, especially GaAs, by melt epitaxy, using a non-stoichiomecric metal melt. A thick walled cylindrical melting crucible is used to receive the semiconducting compound. A cooling finger capable of being unscrewed is near the bottom of the melt area. A substrate is placed between the hollow crucible and the cooling finger, by a thermal resistance which increases toward the center in that portion of the cooling finger on which the substrate bears, so that the temperature gradient, before and during epitactic coating, is in the axial direction only and not in the radial direction thereby resulting in very planar growth layers.

3,762,944

ELECTROTHERMOGRAPHIC DUPLICATING SHEET AND PROCESS

Donald D. Sloan, Weston, and Suresh D. Amberker, Framingham, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Division of Ser. No. 863,365, Oct. 2, 1969, Pat. No. 3,672,981. This application Nov. 12, 1971, Ser. No. 198,477

Int. Cl. B44d *1/18*

U.S. Cl. 117—201 **20 Claims**

Electrothermographic reproduction sheet and process in which the latent image is both electrostatic and tacky to achieve more uniform and higher image densities, lower background densities and better resolution.

3,762,945

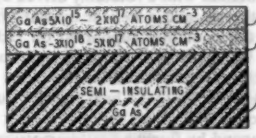
TECHNIQUE FOR THE FABRICATION OF A MILLIMETER WAVE BEAM LEAD SCHOTTKY BARRIER DEVICE

James Vincent DiLorenzo, Piscataway, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 1, 1972, Ser. No. 249,311

Int. Cl. B44d *1/02*

U.S. Cl. 117—215 **2 Claims**



A technique is described for the fabrication of a novel planar millimeter wave beam lead Schottky barrier device. The inventive technique involves the growth of a 6 to 7 micron layer of epitaxial gallium arsenide doped to 3 to 5 × 10^{16} atoms/cc on a semi-insulating gallium arsenide substrate by the arsenic trichloride-gallium-hydrogen vapor transport technique. Following, the epitaxial layer is etched in the same ambient by adding helium and establishing a doping level of 5 × 10^{15} to 2 × 10^{17} atoms/cc. Growth of a 0.1 to 0.2 micron thick layer of gallium arsenide is then effected. The technique results in the formation of an abrupt doping profile and in a device manifesting enhanced frequency.

3,762,946

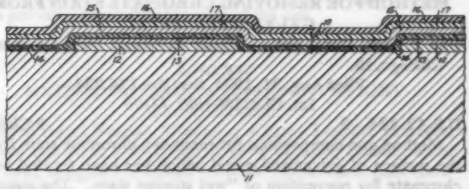
SMALL-PARTICLE-LOADED ELECTRICALLY CONDUCTIVE ADHESIVE TAPE

Robert H. Stow, White Bear, and Gaylord L. Groff, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 21, 1971, Ser. No. 191,370

Int. Cl. B44d *1/18*; A61i *15/06*

U.S. Cl. 117—227 **8 Claims**



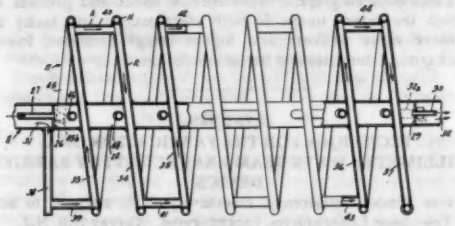
Electrically conductive adhesive tapes in which the layer of adhesive is made conductive by the inclusion of small, complex metal particles having a low apparent density.

3,762,947

CRYSTALLIZER

Charles Ornstein, Pittsfield, Mass.; Floyd L. Corson, Brookfield, and Fred W. Schenck, Broadview, both of Ill., assignors to CPC International Inc., Chicago, Ill.

Filed Oct. 12, 1971, Ser. No. 188,422
Int. Cl. C13f *1/02*; F28f *5/00*
U.S. Cl. 127—15 9 Claims



A crystallizer construction for sugar and the like having a cylindrical container with a rotatably driven axially extending hollow shaft therein and a helical tubular coil adjacent the periphery of the container supported on radially extending tubes spaced 90° apart with short, straight axially extending tubes across the end of the ends of the radial tubes with said tubes interconnected so that a heat transfer fluid flows from a first to the second end of the container, back to the first and back to the second by flowing first diametrically through the radial tubes and axially between the ends of the radial tubes in a zigzag path, next through the helical coil and then back through other radial tubes. The hollow shaft conducts a separate flow of heat exchange fluid.

3,762,948

REJUVENATION OF DETERIORATED ANION EXCHANGE RESINS OCCLUDED WITH ORGANIC IMPURITIES

Donald E. Morton, and Roger S. Leiser, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed July 2, 1971, Ser. No. 159,546
Int. Cl. B01d *15/06*; C13d *3/14*
U.S. Cl. 127—46 A 20 Claims

Anionic exchange resins exhibiting a reduced syrup refining capacity are rejuvenated to a useful state by treating the anionic exchange resins at a temperature of at least 170° F. with a concentrated acid solution for a period of time and under conditions sufficient to remove therefrom the occluded organic impurities which interfere with its anionic exchange capacity.

3,762,949

METHOD FOR REMOVING CHROMATE STAIN FROM GALVANIZED METAL

Uno T. Hill, Gary, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed Aug. 31, 1971, Ser. No. 176,721
Int. Cl. C23f *3/00*, *11/00*
U.S. Cl. 134—3 9 Claims

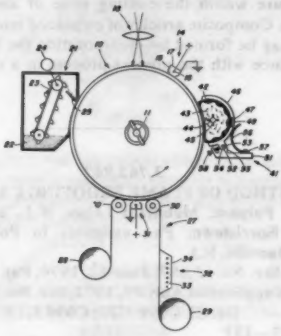
Method and composition for removing chromate stain from the surface of galvanized metal which has been treated with chromate for prevention of "wet storage stain." The stained metal is treated with an aqueous solution of hydrogen peroxide, oxalic acid, sodium hypophosphite or formic acid, optionally containing phosphoric acid and boric acid. After treatment for stain removal, the treated metal retains its resistance to the appearance of "wet storage stain."

3,762,950

CLEANING OF PARTICLES FROM A SURFACE

Stephen F. Royka, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1971, Ser. No. 200,839
Int. Cl. G03g *13/00*, *15/00*; B08b *1/02*
U.S. Cl. 134—6 9 Claims



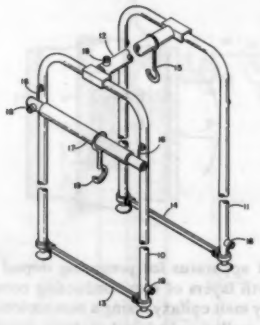
Cleaning of particles from a surface, in particular toner particles from an electrostatographic recording surface, by confining a mass of a soft, non-tacky material which becomes fluid upon the application of a low shearing stress, in a housing adjacent to the surface, with the material being in contact with the surface. The mass of material is subjected to shearing stress and caused to flow over and in contact with the surface entrapping the particles in the material and thereby removing the particles from the surface.

3,762,951

METHOD AND APPARATUS FOR REMOVING ACCUMULATED PAINT FROM PAINT RACKS

Frank W. Hetznecker, Wabash, Ind., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 8, 1971, Ser. No. 178,721
Int. Cl. B08b *7/02*
U.S. Cl. 134—16 11 Claims



A method and apparatus for removing accumulated paint from paint racks used to support articles to be spray painted. Frame members of the paint rack are enclosed in a substantially skin-tight relation by one or more flexible inflatable boots. To remove accumulated paint from the exterior of the paint rack, the boots are internally pressurized causing the expansion of the boots and thereby the cracking and peeling of the accumulated paint.

3,762,952

REMOVAL OF VINYLBENZYLHALIDE POLYMERIC DEPOSITS FROM SURFACES

Albert J. Gouin, Bay City, and Richard H. Hall, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 30, 1972, Ser. No. 302,232
Int. Cl. B08b *3/08, 3/10*
U.S. Cl. 134—38 5 Claims

Deposits of polymer on the surfaces of process equipment used for the manufacture of vinylbenzyl halides are removed by contacting the fouled surfaces with a mixture of aqueous tertiary amine and a polymer-swelling solvent, i.e., chlorinated hydrocarbon or aromatic hydrocarbon and separating the thereby loosened deposits by means such as ultrasonic vibrations or a water wash.

3,762,953

COMPOSITION AND METHOD FOR STRIPPING POLYVINYL BUTYRAL PRIMED COATINGS

Gail H. Clarke, Jr., Grulford, and Henry G. Barnowski, Jr., Durham, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 109,701, Jan. 25, 1971, Pat. No. 3,705,857. This application Aug. 23, 1972, Ser. No. 283,130
Int. Cl. B08b *7/00*
U.S. Cl. 134—38 9 Claims

A fast-acting stripping composition is employed to strip a variety of coatings, including polyurethane and polyepoxide coatings, from substrates which had been primed with polyvinyl butyral. The stripping composition comprises a mixture of a dialkyl ketone and a solvent selected from the group consisting of dimethyl formamide, tetrahydrofuran, and mixtures thereof.

3,762,954

PROCESS FOR ENHANCING THE CAPACITY OF A CARBON ELECTRODE

Joseph E. Metcalfe, III, Bedford Heights; Robert A. Rightmire, Northfield, and Allan V. Marse, Independence, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Mar. 22, 1971, Ser. No. 126,807
Int. Cl. H01m *35/02*
U.S. Cl. 136—22 9 Claims

The energy storage capacity of a carbon electrode can be increased by advantageously incorporating additive elements into the electrode by the process of initially heat-treating the carbon electrode at a temperature between 700° and 1,000° C under a partial vacuum; subsequently exposing the electode to the vapors of the desired compound under a slightly positive pressure and at a temperature below about 1,000° C; followed by cycling the electrode alternately in a charge and discharge direction in a cell containing a fused salt electrolyte composed of the halides of alkali metals or alkaline earth metals or their mixtures.

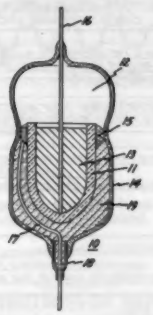
3,762,955

SEALED PRIMARY SODIUM-HALOGEN BATTERY

Robert R. Dubin, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,082
Int. Cl. H01m *1/08, 27/16*
U.S. Cl. 136—83 R 9 Claims

A sealed primary sodium-halogen battery is disclosed which has a high temperature sodium and halogen resistant closed glass envelope surrounding a casing of sodium ion-conductive material with one open end and sealed to the casing adjacent its open end. An anode is positioned preferably in the casing while a cathode of a halogen in conductive material is positioned preferably within the glass envelope between the exterior surface of the casing and the glass envelope and in contact with the casing.

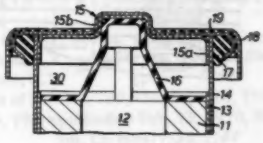


3,762,956

ELECTROCHEMICAL CELLS

Peter James Gillespie, Hampshire, Basingstoke, England, assignor to Energy Conversion Limited, London, England

Filed Dec. 1, 1970, Ser. No. 94,009
Claims priority, application Great Britain, Dec. 3, 1969, 58,918/69
Int. Cl. H01m *1/02*
U.S. Cl. 136—86 A 9 Claims



Gas depolarized cell which includes a vent to allow the pressures interior and exterior of the cell to equalize. The vent comprises an aperture or volume closed by electrolyte-phobic, gas permeable material. This material is preferably a portion of the cathode of the cell. End cap crimping arrangements are also provided for sealing the ends of the cell.

3,762,957

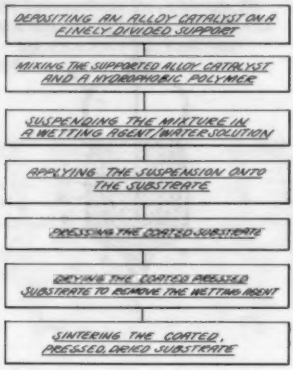
METHOD OF FABRICATING LIGHTWEIGHT ELECTRODES

Richard David Breault, Coventry; Alluren Leonard Marcere, East Hartford, and Arthur Everett Jackson, Enfield, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 8, 1970, Ser. No. 44,498
Int. Cl. H01m *13/02*
U.S. Cl. 136—121 7 Claims

An electrode with a noble metal loading of no greater than 1 mg./cm.^{2} is prepared by depositing an alloy catalyst on a finely

divided support, mixing the supported alloy catalyst and a hydrophobic polymer, suspending the mixture in a wetting agent water solution, applying the suspension onto a substrate, pressing the coated substrate, drying the coated pressed substrate and sintering the coated, pressed, dried substrate.

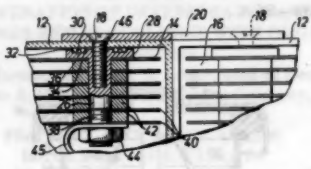

DEPOSITING AN ALLOY CATALYST ON A FINELY DIVIDED SUPPORT
MIXING THE SUPPORTED ALLOY CATALYST AND A HYDROPHOBIC POLYMER
SUSPENDING THE MIXTURE IN A WETTING AGENT/WATER SOLUTION
APPLYING THE SUSPENSION ONTO THE SUBSTRATE
PRESSING THE COATED SUBSTRATE
DRYING THE COATED PRESSED SUBSTRATE TO REMOVE THE WETTING AGENT
SINTERING THE COATED, PRESSED, DRIED SUBSTRATE

3,762,958

ELECTRICAL ACCUMULATOR CELL OR ACCUMULATOR BATTERY

John Fredrik Kuylenstierna, Oskarshamn, Sweden, assignor to Svenska Ackumulator Aktiebolaget Jungner, Oskarshamn, Sweden

Filed Feb. 5, 1971, Ser. No. 112,904
Int. Cl. H01m 5/00
U.S. Cl. 136—134 R **10 Claims**



Electric accumulator cell arranged in a cell box, the positive and negative essentially plane electrode plates being joined together into separate groups of electrodes by means of plate straps and being further lowered into a liquid electrolyte and provided with current discharging means for withdrawal of current to a consumer, said withdrawal taking place through at least two current discharging means connected to the corresponding number of plate straps on the electrode plates.

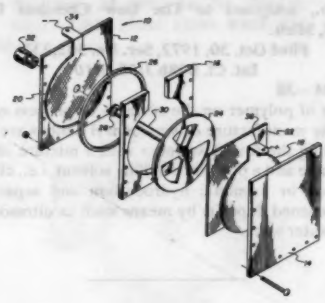
3,762,959

SECONDARY BATTERY WITH MOVABLE SHUTTER MEANS BETWEEN FIXED ELECTRODES

Lowell R. McCoy, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 29, 1971, Ser. No. 129,089
Int. Cl. H01m 31/02
U.S. Cl. 136—141 **7 Claims**

An electrically regenerable electrochemical system has a rotating apertured shutter between fixed negative and positive electrodes which provides both electrolyte circulation and pulsed charging to form deposits on the electrodes during the charge mode of the repeated charge and discharge cycles that are smooth, uniform and adherent. A zinc-nickel oxide secondary battery of this system is uniquely suited for use in hybrid vehicular power systems because of its ability to provide long cycle life at very high power densities under conditions of rapid cycling.



3,762,960

THERMOELECTRIC ALLOYS

Emanuel Andrew Skrabek, Baltimore, and Donald Smith Trimmer, Timonium, both of Md., assignors to Teledyne, Inc., Los Angeles, Calif.

Division of Ser. No. 8,043, Feb. 2, 1970, Pat. No. 3,695,867, which is a continuation-in-part of Ser. No. 593,469, Nov. 10, 1966, abandoned, which is a continuation-in-part of Ser. No. 509,511, Nov. 24, 1965, abandoned. This application Mar. 8, 1972, Ser. No. 232,670
Int. Cl. H01v 1/18
U.S. Cl. 148—3 **3 Claims**

Improved alloys suitable for thermoelectric applications and having the general formula:

$$(AgSbTe_2)_{1-x}+(GeTe)_x$$

wherein x has a value of about 80 and 85, have been found to possess unexpectedly high thermoelectric properties such as efficiency index, as well as other improved physical properties.

3,762,961

PRODUCTION OF VACANCIES IN METALS BY LASER BOMBARDMENT

Stephen A. Metz, Oxon Hill, Md., and Fred A. Smidt, Jr., Springfield, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 22, 1972, Ser. No. 228,249
Int. Cl. C22f 3/00
U.S. Cl. 148—4 **3 Claims**

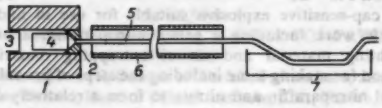
Lattice vacancies are induced in Ni and Va foils by bombardment of the foils with short, high-intensity laser pulses. Vacancy aggregates (voids or faulted loops) are then formed by annealing the bombarded foils at temperatures greater than about 0.3 T_m (absolute melting point) where vacancies become mobile.

3,762,962

SOLUTION HEAT TREATMENT OF HARDENABLE ALUMINIUM ALLOYS

Jan Nilsson, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Mar. 9, 1972, Ser. No. 233,251
Int. Cl. C22f 1/04
U.S. Cl. 148—11.5 A 3 Claims



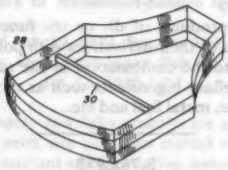
A billet, formed of a hardenable aluminium alloy containing substantial amounts of undissolved constituents other than aluminium and which has not been solution-heat treated, is hydrostatically extruded through a die at such a rate that, considering the reduction in cross-section and the rate of extrusion, the extruded product attains a temperature greater than the dissolving temperature of the constituents. The temperature of the extruded product is kept at substantially the dissolving temperature for a time sufficient to product dissolution and is thereafter rapidly cooled.

3,762,963

STRIP STEEL CUTTING DIE STOCK AND METHOD FOR ITS MANUFACTURE

Thomas H. Milhollan, Coraopolis, and David M. Pasquale, New Brighton, both of Pa., assignors to precision-Kidd, Inc., West Aliquippa, Pa.

Filed Oct. 20, 1971, Ser. No. 191,036
Int. Cl. C21d 7/00
U.S. Cl. 148—12 6 Claims



Strip steel cutting die stock, such as that used in clicker dies, and a technique for cold drawing strip stock whereby cutting edges are formed during the cold drawing operation without the necessity for further machining or grinding. This is achieved by a series of annealing, rolling and drawing steps which insure against decarburization while at the same time enable the production of strip stock of such hardness that it can be subsequently shaped into a clicker die section or the like and then quench-hardened.

3,762,964

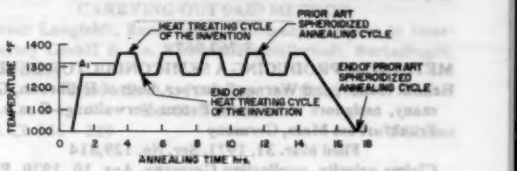
METHOD FOR PRODUCING COLD-WORKABLE HYPOEUTECTOID STEEL

Helmut Kranenberg, Bethlehem, Pa., assignor to Bethelhem Steel Corporation, Bethlehem, Pa.

Filed Apr. 10, 1972, Ser. No. 242,473
Int. Cl. C21d 7/00
U.S. Cl. 148—12 9 Claims

Hypoeutectoid steels are worked within a temperature range of between the A_1 temperature to 150° F. below the A_1 temperature. The cross-sectional area of the steels is reduced by not less than 60 percent during working. After working, the steels can be heated to about the A_1 temperature to obtain the optimum hardness and ductility for cold-working.

The as-worked structure and the heat treated structure are also described.



3,762,965

SOLDER COMPOSITIONS OF IMPROVED ACTIVE SOLDER VEHICLES

Rajnikant B. Amin, Wilmington, Del., and John R. Larry, Youngstown, N.Y., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 27, 1971, Ser. No. 166,632
Int. Cl. B23k 35/24, 35/24
U.S. Cl. 148—24 11 Claims

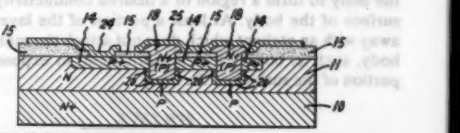
Novel vehicles comprising an active chloride-containing organic compound which is capable of removing surface oxides from soldering metals, a thixotropic agent, rosin (or derivatives thereof) and an organic solvent. These vehicles are used to form solder compositions which contain finely divided solder metals dispersed in the vehicle. Solder compositions which are useful for either screen-printing or dipping techniques may be formed. The use of this novel vehicle provides good solder flowability at soldering temperatures, good solder bonds, and reduced solderball formation. These compositions are particularly suited for soldering electronic circuitry.

3,762,966

METHOD OF FABRICATING HIGH EMITTER EFFICIENCY SEMICONDUCTOR DEVICE WITH LOW BASE RESISTANCE BY SELECTIVE DIFFUSION OF BASE IMPURITIES

William E. Engeler, Scotia, and Marvin Garfinkel, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 760,526, Sept. 18, 1968, Pat. No. 3,577,045. This application Feb. 13, 1970, Ser. No. 14,903
Int. Cl. H01l 7/36, 7/44
U.S. Cl. 148—175 8 Claims



A transistor, such as NPN type, for example, is fabricated by first diffusing a heavily doped P-type base contact region into an N-type semiconductor layer epitaxially grown on a heavily doped N-type semiconductor wafer. Holes are etched through the base contact region into the N-type layer and strongly N-type semiconductor material containing both N-type impurities and faster diffusing P-type impurities is epitaxially grown so as to fill the holes. The wafer is then heated to diffuse the P-type impurities so as to form a base region of controlled thickness, simultaneously forming emitter-base and base-col-

lector junctions. Emitter contact is made by contacting the material epitaxially grown in the holes. Other type semiconductor devices, such as semiconductor controlled rectifiers, may also be fabricated in this manner.

3,762,967

METHOD OF PRODUCING A SEMICONDUCTOR DEVICE

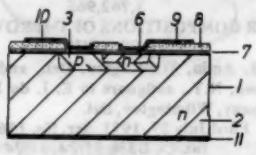
Helmut Holzer, and Werner Scherber, both of Heilbronn, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Mar. 31, 1971, Ser. No. 129,814

Claims priority, application Germany, Apr. 10, 1970, P 20 17 175.9

Int. Cl. H01l *7/34*

U.S. Cl. 148—187 **12 Claims**



A method of producing a semiconductor body comprising producing at least two semiconductor regions of different types of conductivity, applying an atomic or molecular distribution of particles, which in conjunction with the material of the semiconductor body assumes a negative charge, onto an exposed region of the semiconductor body over at least one of said regions and covering the semiconductor body surface with an insulating layer.

3,762,968

METHOD OF FORMING REGION OF A DESIRED CONDUCTIVITY TYPE IN THE SURFACE OF A SEMICONDUCTOR BODY

Henry Kressel, Elizabeth, and Herbert Nelson, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 7, 1971, Ser. No. 131,956

Int. Cl. H01l *7/38*

U.S. Cl. 148—171 **6 Claims**

A body of single crystalline gallium arsenide or aluminum gallium arsenide containing a relatively low concentration of aluminum is coated by liquid phase epitaxy with a layer of aluminum gallium arsenide containing a relatively high concentration of aluminum. The aluminum gallium arsenide layer has therein a desired conductivity modifier. The coated body is heated to diffuse the conductivity modifier from the layer into the body to form a region of a desired conductivity along the surface of the body. At least a portion of the layer is etched away with an etchant which does not attack the material of the body, such as boiling hydrochloric acid, to expose at least a portion of the surface of the body.

3,762,969

COMBINATION BURNING RATE CATALYST AND CURATIVE

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 5, 1968, Ser. No. 707,358

Int. Cl. C06d *5/06*

U.S. Cl. 149—19.2 **10 Claims**

Epoxyethylferrocene used as a combination burning rate catalyst and curative in a solid propellant composition.

3,762,970

GELLED NITROPARAFFIN EXPLOSIVE COMPOSITION CONTAINING AIR-ENTRAPPER PLUS INERT WEIGHTING MATERIAL

Carlos E. Ballard, Sugarland, and Thurmond D. McMillan, Pasadena, both of Tex., assignors to Reed Tool Company, Houston, Tex.

Continuation-in-part of Ser. No. 96,260, Dec. 8, 1970, abandoned. This application Dec. 4, 1972, Ser. No. 311,966

Int. Cl. C06b *1/04*

U.S. Cl. 149—21 **10 Claims**

A cap-sensitive explosive suitable for use in underwater seismic work including a gelled nitroparaffin, a nitrate, a weighting material and an air-entrapping material; and method for making same including the steps of pre-mixing the gelled nitroparaffin and nitrate to form a relatively dry mixture and admixing therewith a weighting material and an air-entrapping material. This abstract is neither intended to define the invention of the application, which of course is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,762,971

THIXOTROPIC HYDRAZINE FUEL GELLED WITH CROSS-LINKED POLYACRYLIC ACID

James M. Lucas, El Dorado Hills, and Eugene M. Vander Wall, Citrus Heights, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed Aug. 16, 1967, Ser. No. 662,271

Int. Cl. C06c *1/02*

U.S. Cl. 149—36 **9 Claims**

This patent describes novel gelled hydrazine-type fuels suitable for use in rockets, missiles and the like. The gelling agents are cross-linked polyacrylic acid polymers.

3,762,972

REACTION PRODUCT OF PHOSPHINE OXIDE WITH CARBOXYLIC ACIDS

Henry C. Allen, Decatur, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed July 30, 1969, Ser. No. 851,137

Int. Cl. C06h *7/00*; C07d *23/06*

U.S. Cl. 149—109 **11 Claims**

The reaction products of di- or tri- functional aziridinyl phosphine oxides or their derivatives with polyfunctional carboxylic acids, and the combination of the reaction products with other propellant ingredients such as inorganic oxidizer, binder, plasticizer, metal fuel and etc.

3,762,973

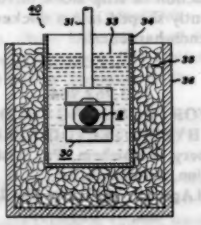
METHOD OF ETCH SUBDIVIDING SEMICONDUCTOR WAFERS

Sami I. Gabrail, Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Apr. 1, 1969, Ser. No. 812,182

Int. Cl. H01l *7/50*

U.S. Cl. 156—17 **6 Claims**



This invention relates to a method of increasing the spacing between the confronting side walls of adjacent semiconductor

pellets constituting portions of a subdivided wafer of semiconductor material secured to a flexible substrate without disturbing the relative orientation which the portions had in the parent wafer before its subdivision. The substrate is bent to form grooves of tapered cross-section between the confronting side walls of the adjacent pellets. An etchant is then placed in the grooves so as to etch the exposed side walls of the pellets and thereby enlarge the cross-section of the grooves and the consequent spacing of the pellets, without disturbing the original relative orientation of the pellets.

3,762,974

METHOD FOR THE MANUFACTURE OF COMPRESSED BOARDS

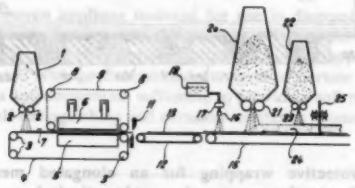
Walter Wirz, Thalwil, Canton of Zurich, Switzerland, assignor to Peter Fahrni, Head of Fahrni Institute, Ltd., Zurich, Switzerland

Filed Oct. 14, 1971, Ser. No. 189,223

Claims priority, application Switzerland, Oct. 15, 1970, 15227/70

Int. Cl. B29j *5/04, 5/02*

U.S. Cl. 156—62.2 **8 Claims**



The object of the present invention is a method of producing compressed boards by the hot pressing of board preforms from particles treated with a thermosetting binder. The field of use is primarily for the manufacture of wood chip boards,but other fields are also important.

3,762,975

WATERPROOFING WITH GRANULAR ASPHALTS

Hajime Iwasaki; Yasuo Tomita, both of Tokyo; Takashi Takase, Narashino, and Hirokasu Saitoh, Omiya, all of Japan, assignors to Mitsuboshi-Sangyo Co., Ltd., Tokyo, Japan

Filed July 19, 1971, Ser. No. 164,126

Claims priority, application Japan, July 18, 1970, 45/62254

Int. Cl. E04b *1/64*

U.S. Cl. 156—71 **6 Claims**

Granular, powdery and flaky asphalts are applied to a base material on the work site and then melted to form a waterproof layer and resultant asphalt roofing material.

3,762,976

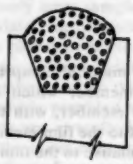
POLYBLEND GEMS AND THE LIKE AND METHODS FOR PRODUCING THEM

Robert C. Winckhofer, and Gene C. Weedon, both of Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 725,767, May 1, 1968, Pat. No. 3,581,522. This application Feb. 19, 1971, Ser. No. 117,141

Int. Cl. B32b *31/02, 31/18*

U.S. Cl. 156—173 **2 Claims**



The disclosure shows, among other things, a cabachoncut chatoyant gem made from fused and aligned polyblend filaments.

3,762,977

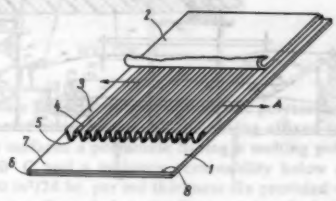
METHOD OF MAKING WORKPIECES FROM A KNITTED FIBER REINFORCED HARDENABLE SYNTHETIC MATERIAL, AND FIBER REINFORCEMENT FOR CARRYING OUT SAID METHOD

Werner Langfeldt, Burladingen, Germany, assignor to Inter-Jersey GmbH & Co. Kommanditgesellschaft, Burladingen, Germany

Filed Mar. 15, 1971, Ser. No. 123,976

Int. Cl. B29c *13/00*

U.S. Cl. 156—229 **3 Claims**



An article containing hardenable synthetic material and a method of making the article, particularly a laminated article in which the core of the article is formed of a deformable textile member having protuberant portions which diminish in height when the textile member is stretched. While the member is stretched, it is impregnated with synthetic material and is then permitted to return to its original shape. One or more cover layers are applied to the member and bonded thereto by hardening the synthetic material.

3,762,978

METHOD FOR IMPROVING THE ADHESION BETWEEN SILICONE ELASTOMERS

George W. Holmes, Walnut Creek, Calif., and Eldon E. Frisch, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed July 15, 1971, Ser. No. 163,073

Int. Cl. B32b *25/20, 31/22*

U.S. Cl. 156—308 **7 Claims**

A cured silicone elastomer prepared from a composition containing silicon-bonded alkoxy radicals is contacted with a strong mineral acid, washed with water until free of acid, dried and thereafter a room temperature vulcanizable silicone elastomer composition is applied thereto and allowed to cure whereby an improved bond between the two silicone elastomers is realized.

3,762,979

VINYLIDENE CHLORIDE-VINYL CHLORIDE COPOLYMER COMPOSITIONS FOR USE AS AN ADHESIVE SEAM IN FABRIC CONSTRUCTION

Phil G. Hanel, and George A. Becker, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 19, 1971, Ser. No. 173,297

Int. Cl. C09j *3/00;* **C09j** *7/00*

U.S. Cl. 156—333 **5 Claims**

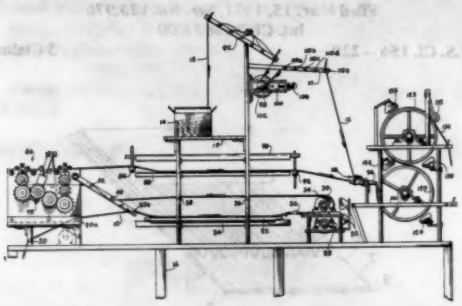
This invention is directed to compositions of normally crystalline copolymers of vinylidene chloride and vinyl chloride containing small amounts of a polycaprolactone resin, which compositions are particularly suited for use as an adhesive seam in fabric construction, e.g., in the dielectric bonding of woven or nonwoven fabric materials.

3,762,980

MACHINE FOR MAKING MULTI-PLY BELTS FOR WAISTBAND CONSTRUCTION

Joseph P. Maggio, Farmingdale, N.Y., assignor to Elastic Systems Corporation, Farmingdale, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,324
Int. Cl. B31f *1/00*
U.S. Cl. 156—461 5 Claims



1. A method of making multi-ply rubber core-knit fabric sheath belts used in garment waistband construction, said method comprising the steps of folding and creasing a knit fabric strip to form a closed sheath, feeding a rubber core, consisting of at least one rubber strip, to said sheath, opening said sheath to receive said rubber core, applying a bonding agent between said rubber core and said open sheath, closing said sheath upon said rubber core, and applying heat and pressure to said closed sheath to set the bonding agent and thereby bond the sheath and rubber core together.

2. A machine for performing the above listed method steps, said machine comprising folding and creasing means for folding and creasing a knit fabric strip to form a closed sheath, feeding means for feeding a rubber core, consisting of at least one rubber strip, to said sheath, unfolding means for opening the closed sheath to receive said rubber core, applicator means for applying a bonding agent between said rubber core and said open sheath, refolding means to close the sheath upon the rubber core, and heating and pressure applying means for applying heat and pressure to the closed sheath to set the bonding agent and thereby bond the sheath and rubber core together.

3,762,981

QUICK RELEASE SAFETY WINDSHIELD

Kurt Blank, Haselsteig, Germany, assignor to Saint-Gobain, Boulevard Victor Hugo Neuilly sur Seine, France

Filed Mar. 15, 1971, Ser. No. 124,222
Claims priority, application France, Mar. 16, 1970, 7009212
Int. Cl. B32b *17/10, 31/12*
U.S. Cl. 161—40 11 Claims

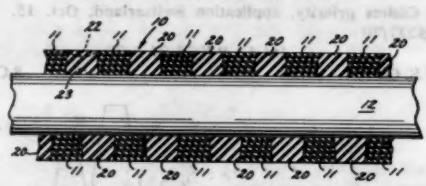
A quick release windshield is constructed of a thin sheet of glass, an interlayer of poly-vinyl butyral and a surface layer of a cellulose aceto-butyrate or cellulose tripropionate. The cellulose ester is preferably mounted on the butyral by means of a transparent adhesion-promoter such as tin-II-chloride. For use in places where the organic layer is apt to be marred, its surface is hardened by the application of a coating of an organic polysiloxane. The glass projects beyond the organic layers and serves as the only major mounting means.

3,762,982

PROTECTIVE WRAPPING FOR ELONGATED MEMBER

Richard B. Whittington, Long Beach, Calif., assignor to Whitlock, Inc., Long Beach, Calif.

Filed June 7, 1971, Ser. No. 150,332
Int. Cl. B65h *81/00*
U.S. Cl. 161—47 5 Claims



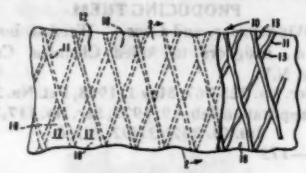
A protective wrapping for an elongated member of generally circular cross section, and particularly an abrasion resistant wrapping to protect marine cables and conduits. The wrapping is a helically oriented element formed of laminations preventing it from being opened outwardly and away from the protected cable, but allowing the cable to flex. The wrapping can be installed by placement crosswise on the cable and winding it about the cable to seat successive turns. Clamps, or a helical filler located between turns of the element, are used to axially extend the wrapping to effect a tight grip upon the protected cable.

3,762,983

HEAT SHRINKABLE MATERIAL WITH MOVEABLE INTERLAYER

Robert O. Osborn, Snyder, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 831,970, June 10, 1969, Pat. No. 3,649,405. This application June 8, 1971, Ser. No. 150,912
Int. Cl. B32b *3/20*
U.S. Cl. 161—49 8 Claims



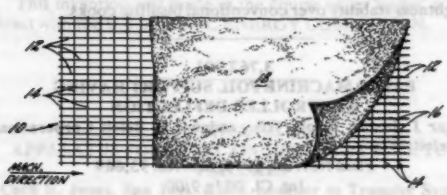
A heat shrinkable material comprising an oriented plastic open-mesh netting member which is completely enclosed within a plastic film member, with the netting member not being fixedly secured to the film member whereby the netting member may move relative to the film member during tearing, for example. When the material is shrunk, it will shrink substantially uniformly due to the orientation of the netting member. Methods are provided for making this material.

3,762,984

NONWOVEN APPLIQUE MATERIAL

Leroy J. Goldbeck, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 800,582, Feb. 19, 1964, abandoned. This application Jan. 25, 1971, Ser. No. 109,528
Int. Cl. B32b 5/12
U.S. Cl. 161—57 7 Claims



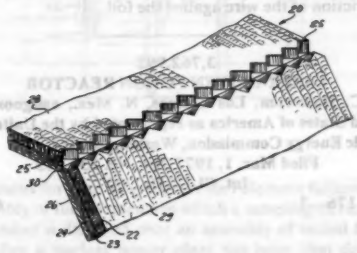
A nonwoven applique material for use in disposable garments worn in contact with the skin comprising a scrim with an applique adhesively bonded to the scrim. The applique is impregnated with predetermined amounts of certain acrylic adhesives and ammonium sulfamate to provide a soft material having self-extinguishing and abrasion resistance properties.

3,762,985

CARPET AND LIKE FABRIC SAMPLE CARRIER

Jack L. Chaitman, Montreal, Canada, assignor to Howard Displays, Inc., New York, N.Y.

Filed May 11, 1970, Ser. No. 36,256
Int. Cl. B65d 79/00, 81/36
U.S. Cl. 161—67 5 Claims



The present invention relates generally to a method of preparing carpet sample carriers and like fabric sample units and to improved sample products derived from such method.

The invention more specifically has reference to the construction of a carpet sample carrier or unit, which may comprise practically a relatively large sample area, but which can be conveniently manipulated for obtaining therefrom through severance small swatch pieces or portions of predetermined dimensions, sizes, configurations and identification as to quality, color, production number, etc. To this end the carpet sample carrier is advantageously provided with precut or scored marks or incisions which are virtually hidden from view, do not in any way disturb the outer appearance, perception and impression of a sample piece of carpet and the like, but can be readily divided and separated into pieces or portions of swatches each bearing desirable identifications, markings and the like for any practical purposes.

3,762,986

POLYAMIDE COMPOSITE FILM

Mahendra Bhuta, Mendham, and William Sacks, Gillette, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,300
Int. Cl. B32b 27/34; C08j 1/42
U.S. Cl. 161—227 11 Claims

Composite films comprising at least one polyamide having a melting point above about 200° C having affixed to at least one of its surfaces a polyamide having a melting point below about 200° C and a moisture permeability below about 10 grams/100 in²/24 hr. per mil thickness are provided which exhibit an excellent balance of properties including high strength, clarity and low moisture and gas permeability.

3,762,987

WATER-SOLUBILIZED POLYVINYL ADHESIVE METHOD

Iwao Maruta, deceased, Funabashi-shi, Chiba, Japan; by Kiyoko Maruta; by Yoshi Maruta, both of Chiba, Japan (legal representatives); Haruhiko Arai, Urawa-shi, and Shoji Horin, Chiba, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 837,341, June 27, 1969, abandoned. This application Apr. 20, 1971, Ser. No. 135,692
Int. Cl. B32b 27/10, 31/12
U.S. Cl. 161—251 9 Claims

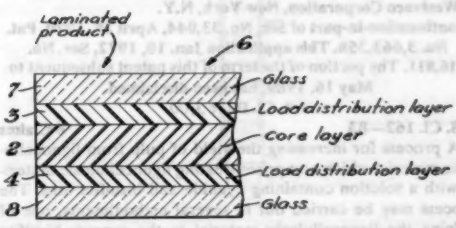
Materials are adhesively attached to each other by applying therebetween in bonding relationship a moisture sensitive water-solubilized water-insoluble high moecular weight polyvinyl compound, thus to produce a novel bonded article exhibiting strong cohesiveness in the dry state and significantly reduced cohesiveness in the wet state, thus permitting said materials to be separated upon moistening.

3,762,988

INTERLAYER AND LAMINATED PRODUCT

Gerald E. Clock, Midland, and Charles N. Brown, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 9, 1971, Ser. No. 169,935
Int. Cl. B32b 17/10, 27/08
U.S. Cl. 161—183 12 Claims



A safety glass interlayer in the form of a laminate comprises the combination of a core layer of a normally solid, synthetic, polymer material such as an ionic copolymer and a load dis-

tribution layer of a normally solid, synthetic, polymer material such as a copolymer of styrene and butadiene on either side of and bonded to the core layer. A laminated product suitable for use as safety glass includes at least two layers of glass having the interlayer disposed between and in mating relationship with the glass layers. The interlayer can be produced by coextruding the polymers under conditions to obtain the product desired. The laminated product can be produced by disposing the interlayer between two sheets of glass and effecting a bond between the mating surfaces under suitable conditions of temperature and pressure in a platen press or the like.

3,762,989

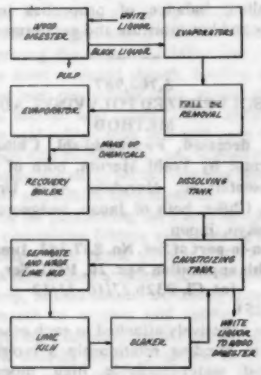
PYROLYSIS OF SPENT PULPING LIQUORS

Winfried G. Timpe, New City, N.Y., assignor to St. Regis Paper Company, New York, N.Y.

Continuation of Ser. No. 819,817, April 28, 1969, abandoned. This application July 30, 1971, Ser. No. 167,871

Int. Cl. D21c 11/12

U.S. Cl. 162—30 **13 Claims**



Disclosed is a process for recovering the organic values in spent pulping liquors by heating aqueous spent pulping liquor in the absence of additive reagents at 490°–700°F under 1,000–3,500 lbs/sq. inch pressure for from 10 minutes to 3 hours to obtain a vapor containing organic valves therein, a solid precipitate containing organic valves therein, and an aqueous effluent.

3,762,990

DIGESTION OF LIGNOCELLULOSIC MATERIAL WITH CYANIDE AND BISULFITE IONS AT A PH BELOW 7

Sten I. Falkehag, Mount Pleasant; Alan M. Bills, Summerville, and Harold L. Hintz, Charleston, all of S.C., assignors to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 33,044, April 29, 1970, Pat. No. 3,663,358. This application Jan. 10, 1972, Ser. No. 216,811. The portion of the term of this patent subsequent to May 16, 1989, has been disclaimed.

Int. Cl. D21c 3/00

U.S. Cl. 162—83 **6 Claims**

A process for increasing the yield of pulp from lignocellulosic material which comprises treating lignocellulosic material with a solution containing cyanide and bisulfite ions. The process may be carried out in several embodiments, one of pulping the lignocellulosic material in the cyanide-bisulfite solution at conventional bisulfite pulping temperatures of about 170°C. Another embodiment is to treat the lignocellulosic material with the cyanide-bisulfite ion solution at a temperature below 130°C., preferably about 95°C., and follow by heating to conventional bisulfite digesting temperatures. Another embodiment of the process of this invention is to treat lignocellulosic material with a cyanide-bisulfite ion solution at a temperature below 130°C., withdraw the cyanide-bisulfite solution and introduce neutral or acid bisulfite digesting liquor and digest as usual. The process of treating lignocellulosic material with the cyanide-bisulfite containing solution is at a pH below 7 and is faster than by treating lignocellulosic material with a solution containing cyanide ions alone. The treatment of lignocellulosic material according to this process results in pulps having increased yield and improved brightness stability over conventional bisulfite cooks.

3,762,991

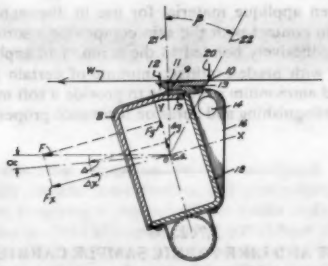
PAPER MACHINE FOIL SUPPORT HAVING CONTROLLED DEFLECTION

Edgar J. Justus, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Nov. 30, 1970, Ser. No. 93,669

Int. Cl. D21g 9/00

U.S. Cl. 162—352 **5 Claims**



A dewatering foil for positioning beneath a traveling Fourdrinier wire of a paper making machine having a supporting beam pivotally mounted at its ends with the beam constructed relative to the foil so that in all positions of support it has a vertical downward component of deflection due to the force of the friction of the wire against the foil.

3,762,992

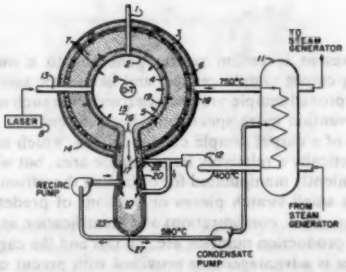
LASER-DRIVEN FUSION REACTOR

James C. Hedstrom, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 1, 1972, Ser. No. 230,863

Int. Cl. G21b 1/00

U.S. Cl. 176—1 **6 Claims**



A laser-driven fusion reactor consisting of concentric spherical vessels in which the thermonuclear energy is derived from a deuterium-tritium (D+T) burn within a "pellet," located at the center of the vessels and initiated by a laser pulse. The

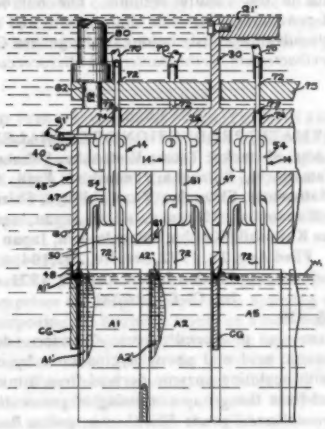
resulting α-particle energy and a small fraction of the neutron energy are deposited within the pellet; this pellet energy is eventually transformed into sensible heat of lithium in a condenser outside the vessels. The remaining neutron energy is dissipated in a lithium blanket, located within the concentric vessels, where the fuel ingredient, tritium, is also produced. The heat content of the blanket and of the condenser lithium is eventually transferred to a conventional thermodynamic plant where the thermal energy is converted to electrical energy in a steam Rankine cycle.

This invention was made in the course of, or under, a contract with the U.S. ATOMIC ENERGY COMMISSION.

3,762,993
APPARATUS FOR DETECTING REACTOR FUEL TUBE FAILURES

Cecil R. Jones, San Jose, Calif., assignor to Transfer Systems Incorporated, New York, N.Y.

Filed June 24, 1971, Ser. No. 156,446
Int. Cl. G21c *17/02*
U.S. Cl. 176—19 R **5 Claims**

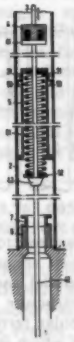


Apparatus for detecting reactor fuel element failures within an assembly of fuel elements in which a sampling device with a test chamber is disposed over an assembly of sealed fuel elements after a nuclear power plant has been shut down and preparation for fuel removal has been completed. Air is conducted through the sampling device to displace the coolant, such as water, in the test chamber above the assembly of fuel elements and to inhibit the circulation of the coolant about the assemblies of fuel elements. As a consequence thereof, the fuel elements of an assembly of fuel elements become heated and fission products are emitted from the defective fuel elements to cause an increase of radio-activity in the water about the assembly of fuel elements. Coolant within or about the assembly of fuel elements is then removed by the sampling device and conducted to a sampling station. At the sampling station is a vial containing a chemical to concentrate the fission products such as an iodine getter, which is exposed to the coolant conducted to the sampling station. The vials containing sample coolant concentrate are moved from the sampling station to a gamma scanner. The gamma scanner senses the activity level of the selected isotope contained in the coolant sample, which is used for detecting the failure of fuel elements within an assembly of fuel elements.

3,762,994
DRIVE ASSEMBLY FOR NUCLEAR REACTOR CONTROL RODS

Horst Kunzel, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Dec. 9, 1970, Ser. No. 96,468
Claims priority, application Germany, Dec. 10, 1969, P 19 61 848.5
Int. Cl. G21c *7/14*
U.S. Cl. 176—36 R **7 Claims**

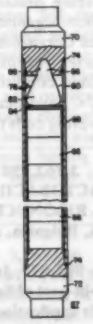


A drive assembly for inserting and removing the control rod of a nuclear reactor has a guide tube arranged outside the reactor and a drive rod connectable to the control rod. The drive rod is movable within the tube between raised and lowered positions and a holding device is provided for holding the drive rod in a raised position. A spring surrounding the drive rod is compressed when the lifting device holds the drive rod in the raised position. The shock absorber disposed at the lower region of the guide tube receives the impact of the spring when the drive rod is released by the holding device.

3,762,995
SEALED CONTAINER HAVING A ZIRCONIUM-TIN ALLOY GETTER

Earl A. Gulbransen, and Sven A. Jansson, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 696,417, Jan. 8, 1968, abandoned. This application Apr. 30, 1968, Ser. No. 725,337
Int. Cl. G21c *3/02, 19/32*
U.S. Cl. 176—68 **6 Claims**



A getter for gases contained within a hermetically sealed container including gases dissolved in the container walls to be maintained substantially free of such gases and disposed within the container a body heatable to an elevated temperature, the getter consisting essentially of a zirconium-base alloy containing from about 10 to about 30 weight per cent tin.

3,762,996

NUCLEAR REACTOR FUEL ELEMENT ASSEMBLY

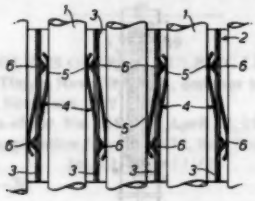
George Milburn, and John Chetter, both of Lytham-St.-Annes, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Mar. 25, 1971, Ser. No. 127,933

Claims priority, application Great Britain, Apr. 8, 1970, 16,802/70

Int. Cl. G21c *3/34*

U.S. Cl. 176—78 10 Claims



A spacer grid for a nuclear reactor fuel element assembly in which a number of fuel pins are supported in a bundle with their longitudinal axes parallel and spaced transversely one from another. The grid structure is of cellular form being made up of cojoined tubular ferrules or intersecting strips defining cells each one of which is penetrated by a fuel pin. Resilient leaf members extend longitudinally in the cells of the grid structure and contact the fuel pins. The back faces of the free ends of the leaf members overlie but are spaced by a small clearance from stop members projecting inside the cells of the grid structure. The resilient leaf members are of low spring rating so as to allow freedom of lateral vibraton of the fuel pin within the cells of the grid structure whilst remaining in contact with the fuel pins. The limits of lateral vibration of the fuel pins is governed by tapping of the back faces of the resilient leaf members on the stop members.

3,762,997

PROCESS FOR RECOVERING PROTEIN-CONTAINING MICROBIAL CELLS

Hiroshi Iizuka; Naosuke Seto, both of Tokyo, and Sadao Sakayanagi, Kawasaki, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Mar. 16, 1970, Ser. No. 20,829

Claims priority, application Japan, Sept. 16, 1969, 44/72993

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 R 8 Claims

A process for recovering protein-containing cells which comprises culturing a microorganism selected from the group consisting of new species *Corynebacterium fujiokense*, *Nocardia neoopaca*, *Arthrobacter rubellus* and *Arthrobacter pectroleophagus* under aerobic conditions in a culture medium containing a gaseous C_2–C_4 hydrocarbon as a carbon source, and separating and recovering cells from the culture broth.

3,762,998

CULTIVATION OF LACTOBACILLUS BULGARICUS TO PRODUCE A RIBONUCLEOPROTEID

Ivan G. Bogdanov, Sofia, Bulgaria, assignor to Texim E.E.E., Sofia, Bulgaria

Continuation of Ser. No. 805,079, Jan. 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 552,552, May 24, 1966, abandoned. This application July 6, 1970, Ser. No. 56,132

Claims priority, application Bulgaria, June 1, 1965, 5091; Mar. 7, 1966, P-3

Int. Cl. A61f *13/00*

U.S. Cl. 424—28 N 4 Claims

The process of manufacturing an active anticarcinogen ribonucleoproteid wherein ribonucleic acid is the bearer of the anticancer activity while the protein acts as its protector and activator, produced by cultivating a micro-organism of the Lactobacillus genus.

3,762,999

METHOD FOR PRODUCING ADENOSINE DIPHOSPHATE AND ADENOSINE TRIPHOSPHATE

Kiyoshi Nakayama, Sagamihara-shi, Japan, assignor to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 658,356, Aug. 4, 1967, abandoned. This application June 17, 1968, Ser. No. 737,313

Claims priority, application Japan, Aug. 8, 1966, 41/51664

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 N 11 Claims

The present disclosure relates to a method for producing adenosine diphosphate and adenosine triphosphate which comprises culturing a microorganism capable of producing adenosine diphosphate and adenosine triphosphate in an aqueous nutrient medium under aerobic conditions in the presence of at least one carbohydrate as the main source of carbon. Advantageously, the culture medium contains carbohydrates in an amount of about 5 percent to 20 percent and inorganic phosphates in an amount of about 0.4 to 3 percent as PO_4. Adenine or its derivatives can be added to the culture medium at any time during culturing in an amount sufficient to accumulate the adenosine disphosphate or adenosine triphosphate in the culture medium. The microorganisms capable of producing adenosine diphosphate and adenosine triphosphate advantageously belong to the genera *Corynebacterium*, *Brevibacterium*, *Arthrobacter* and *Micrococcus*.

3,763,000

ENZYMATIC PRODUCTION OF CEPHALEXIN

Jinnosuke Abe, Shizuoka; Tetsuo Watanabe, Yokohama; Tsutomu Yamaguchi, Shizuoka; Tadashiro Fujii, Shizuoka; Kunio Matsumoto, Shizuoka; Yuzo Shibuya, Shizuoka, and Kazumi Hanamitsu, Shizuoka, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Aug. 21, 1972, Ser. No. 282,104

Claims priority, application Japan, Aug. 20, 1971, 46/63715

Int. Cl. C12d *9/00*

U.S. Cl. 195—29 9 Claims

Cephalexin is produced from 7-amino desacetoxy cephalosporanic acid and phenylglycine ester by enzymatic acylation with acylating enzyme derived from a microorganism selected from the group consisting of genus *Alcaligenes*, genus *Achromobacter*, genus *Flavobacter*, genus *Bacillus* and genus *Beneckea*.

3,763,001

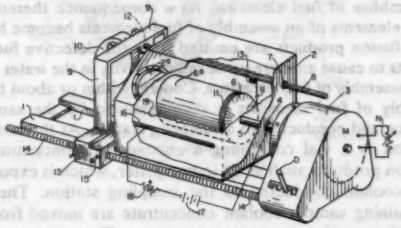
METHOD OF MAKING REINFORCED COMPOSITE STRUCTURES

James C. Withers, 1612 Greenbriar Court, Reston, Va.

Continuation-in-part of Ser. No. 486,078, Sept. 9, 1965, abandoned. This application May 29, 1969, Ser. No. 828,856

Int. Cl. C23b *7/02*, *7/00*

U.S. Cl. 204—16 4 Claims



Process for making composite structures formed of reinforcement strands embedded in a metal matrix in which essen-

tially cylindrical continuous filaments having a diameter within the range of 5–200 microns are wound in layers around a form while the matrix metal is substantially simultaneously deposited between successive layers and between adjacent strands in a given layer, the filaments being guided to the form at a rate sufficient to give a clearance between adjacent filaments equal to at least one-half the filament diameter and the amount of matrix metal between layers being sufficient to give a similar clearance between successive layers equal to at least one-half the filament diameter, the aggregate of the volume of the filaments in the composite structure not exceeding about 60% of the total volume thereof. The matrix metal can be deposited in various ways, including electroplating and vapor deposition.

3,763,002

METHOD OF FORMING PROTECTIVE COATINGS BY ELECTROLYSIS

Robert Max Skomoroski, Paterson, and Gaylord Darrel Smith, Mountainside, both of N.J., assignors to The International Nickel Company Inc., New York, N.Y.

Continuation-in-part of Ser. No. 866,025, Oct. 13, 1969, abandoned. This application Dec. 16, 1971, Ser. No. 208,892

Int. Cl. C23b *5/52*; **C23f** *17/20*; **C23b** *9/00*

U.S. Cl. 204—37 **12 Claims**

Protective ruthenium oxide coatings having desired characteristics of electrical conductivity, adherence to substrate and resistance to corrosion and heat are formed by oxidation of ruthenium in situ on the surface of the article to be protected.

3,763,003

METHOD FOR PRODUCING FERRITE THIN FILM BODY

Selhin Kobayashi; Michihiro Torii, and Katsuyuki Oshima, all of Hamana-gun Shizuoka-ken, Japan, assignors to Fuji Denki Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed June 8, 1971, Ser. No. 151,069

Claims priority, application Japan, June 11, 1970, 45/50454

Int. Cl. C23b *5/52*

U.S. Cl. 204—37 R **9 Claims**

A method for producing a ferrite thin film body is provided which comprises the steps of separately applying each of the metals composing the ferrite in layers on a non-magnetic heat-resistant substrate, subjecting the metallic layers to a diffusion reaction under inert gas at an elevated temperature to produce a diffused solid solution, and subjecting the diffused solid solution to oxidation at an elevated temperature for a time period sufficient to change the solid solution to a ferrite body.

3,763,004

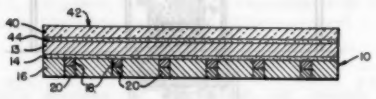
METHOD FOR PRODUCING ELECTRICAL HEATING ELEMENTS FROM METAL-PLATED IMAGES

Eugene Wainer, Shaker Heights, and Harold J. Quaintance, Fairview Park, both of Ohio, assignors to Horizons Incorporated, a division of Horizons Research Incorporated, Cleveland, Ohio

Filed Mar. 31, 1972, Ser. No. 240,019

Int. Cl. C23b *5/48*; **C23f** *17/00*; **B44d** *1/18*

U.S. Cl. 204—38 A **16 Claims**



A novel device exhibiting extensive utility for electric heating purposes is comprised in part of a precious metal image being imbedded in the anodized layer produced by electrolytic oxidation of aluminum in which the aluminum sheet is the anode; and plating thereon in only the precious metal image areas, less noble metals. While silver is the preferred precious metal and nickel is the preferred plating material for many applications, other preferred plating materials are combinations of nickel and chromium cobalt and chromium, and cobalt, nickel and chromium. For some devices, the aluminum backing which carries the anodized layer with the electrical circuit placed thereon, may be removed for the purposes of increasing the temperature of performance of the electrical heating element thus prepared. In other devices, both the aluminum metal and the anodized layer may be removed.

Through the medium of the combination of the novel materials, processes, designs and other modifications described in this specification, items such as food warmers, simmering temperature devices, food cookers, pot warmers and cookers, room and air warmers and heaters, may be produced. In addition, in one and the same piece, combinations of food warmers, food simmers, and food cookers may be produced simply by choosing a proper design of the heater element produced according to the invention.

3,763,005

ELECTROLYTIC PROCESS FOR OBTAINING CHLORINE IN A PURE STATE AND ALKALI METAL PHOSPHATES IN CONCENTRATED SOLUTION AND A CELL FOR ACCOMPLISHING THIS PROCESS

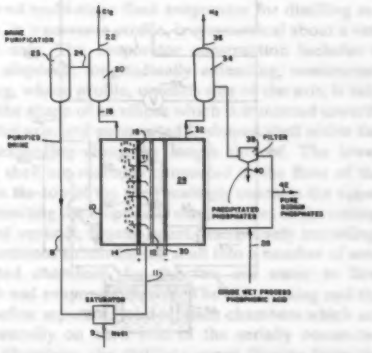
Jean-Louis Butre, and Francois Pierrot, both of Lyon, France, assignors to Progil, Paris, France

Filed May 12, 1971, Ser. No. 142,672

Claims priority, application France, May 15, 1970, 7017742

Int. Cl. C01b *25/30*, *11/26*; **B01k** *1/00*

U.S. Cl. 204—90 **7 Claims**



A process and apparatus for the manufacture of pure chlorine, hydrogen and alkali metal phosphates in concentrated solution by introducing an aqueous alkali metal chloride solution into the anodic compartment of a cell and concentrated phosphoric acid or alkali metal phosphate aqueous solution into the cathodic compartment. The cell has a cationic permselective membrane placed between a porous anode of the titanium group having a platinum metal group coating on the surface opposite the membrane and the cathode.

3,763,006

PROCESS FOR PRODUCING CHLORINE DIOXIDE

Mary Lou Callerame, Rochester, N.Y., assignor to Chemical Generators, Inc., Rochester, N.Y.

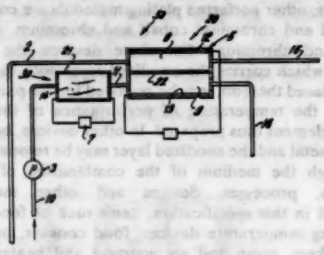
Continuation of Ser. No. 773,008, Nov. 4, 1968, abandoned. This application Mar. 24, 1971, Ser. No. 127,791

Int. Cl. C01b *11/26*, *11/02*

U.S. Cl. 204—103 **1 Claim**

Process of producing chlorine dioxide. Aqueous lithium chlorite is subjected to electrolysis in a cell wherein the anode

is separated from the cathode by a semi-permeable membrane. The procedure is advantageously carried out in a unit



in which the lithium chlorite solution is first produced by reaction of alkali metal chlorate and perchloric acid in the presence of lithium ion.

3,763,007

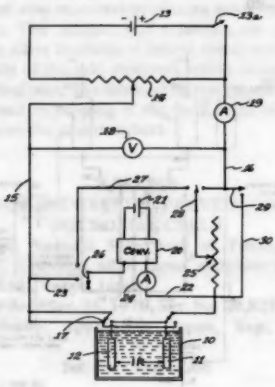
SYSTEMS FOR MEASURING CORROSION RATE

Robert G. Seyl, Evanston, Ill., assignor to Magna Corporation, Santa Fe Springs, Colo.

Division of Ser. No. 713,576, March 18, 1968, Pat. No. 3,607,673. This application Oct. 5, 1970, Ser. No. 78,043

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 C **12 Claims**



A system for correcting for the IR drop between electrodes when corrosion rate of the electrodes is measured by applying a small DC voltage across the electrodes. Ionic conductor resistance is measured by an AC circuit and the AC circuit is then used to adjust a resistor to an equivalent value whereupon the adjustable resistor is used to add a compensating voltage gain to the voltage applying circuit.

3,763,008

PROCESS FOR PRODUCING RIBOSIDES OF HETEROCYCLIC ORGANIC BASES BY FERMENTATION

Kiyoshi Nakayama, Sagamihara; Akira Furuya, Kawasaki, and Fumio Kato, Fukuoka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1972, Ser. No. 229,580

Claims priority, application Japan, Feb. 26, 1971, 46/9298; Apr. 14, 1971, 46/23041; Apr. 14, 1971, 46/23042

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 N **7 Claims**

Ribosides of heterocyclic organic bases are produced by fermentation of an aqueous nutrient medium, containing a heterocyclic organic base, by a microorganism belonging to the genus Brevibacterium, Arthrobacter, Corynebacterium, or Micrococcus. The riboside is accumulated and thereafter recovered from the culture liquor.

3,763,009

SYNTHESIS PROCESS FOR THE PRODUCTION OF ASCORBIC ACID GLUCOSIDE

Yukio Suzuki, Kurashiki, and Toshio Miyake, Okayama, both of Japan, assignors to Hayashibara Company, Okayama, Japan

Filed Oct. 4, 1971, Ser. No. 186,387

Claims priority, application Japan, Oct. 5, 1970, 45/87419

Int. Cl. C12b *1/00*

U.S. Cl. 195—31 R **5 Claims**

The present invention relates to a process for the improvement of the oxidation resistance of ascorbic acid by subjecting a mixture of ascorbic acid, maltose and/or oligosaccharides to the action of an enzyme derived from genera Asperigillus, Penicillium or others to convert the mixture enzymatically into ascorbic acid glucoside.

3,763,010

STABILIZED MICROBIAL RENNET

Hans Schleich, Staten Island, N.Y., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed June 10, 1971, Ser. No. 151,992

Int. Cl. C07g *7/02*

U.S. Cl. 195—63 **4 Claims**

A stabilized microbial rennet from Mucor miehei is prepared by admixing the solid enzyme product recovered from the fermentation broth with 2–3 percent of fatty acid monoesters of polyoxyethylene sorbitan.

3,763,011

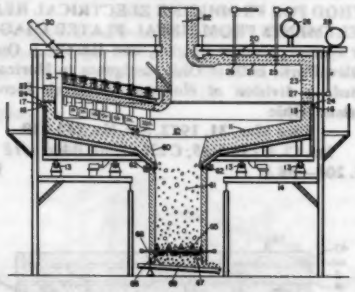
ROTARY HEARTH CALCINER HAVING STATIONARY SOAKING PIT

Victor D. Allred, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Apr. 28, 1971, Ser. No. 138,054

Int. Cl. C10b *7/00*

U.S. Cl. 202—100 **3 Claims**



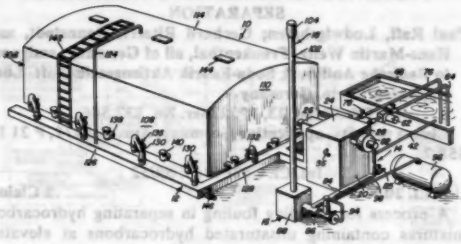
The soaking pit of a rotary hearth furnace is isolated from the hearth by a circulate water seal so that the hearth can rotate while the soaking pit remains stationary. The soaking pit can have a conventional slide gate or other discharge device.

3,763,012

APPARATUS FOR REMOVING POLLUTANTS FROM GASEOUS EFFLUENT

Charles F. Kelley, Gassville, Ark., assignor to W. J. Budwine, Carlsbad, N. Mex.

Filed Apr. 5, 1972, Ser. No. 241,192
Int. Cl. C10b *9/00*
U.S. Cl. 202—93 9 Claims



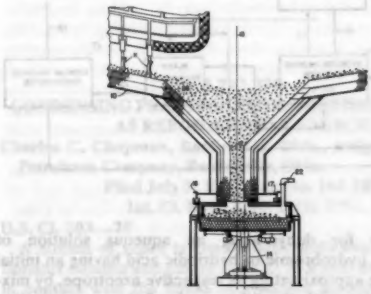
An apparatus for removing pollutants of all types from a gaseous effluent that is moving in a flow path from the source of the gaseous effluent until the cleaned gaseous effluent is discharged to ambient atmosphere. The apparatus includes a separator in the form of a housing having baffle means therein and spray nozzles oriented in a particular relationship for forming a particular flow path through the separator during which the gaseous effluent is treated by contact with a liquid cleaning solution, such as water, discharged from the spray nozzles. The apparatus also includes a burner assembly communicating with the discharge of the separator for final combustion of any residual burnable material contained in the gaseous effluent prior to discharge into the ambient atmosphere. The apparatus is associated with a charcoal forming kiln having a unique structure and association with the pollutant removing apparatus for more efficiently forming charcoal and effectively removing pollutants from the gaseous effluent from the kiln. In this application, the charcoal kiln has been disclosed to illustrate an effective utility for the pollutant removing apparatus and it is within the purview of this invention to utilize the pollutant removing apparatus with other devices which have a gaseous effluent with pollutants therein.

3,763,013

NON CONCENTRIC DISCHARGE TABLE FOR ROTARY HEARTH CALCINER

Victor D. Allred, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Nov. 13, 1970, Ser. No. 89,321
Int. Cl. C10b *7/00*
U.S. Cl. 202—103 6 Claims



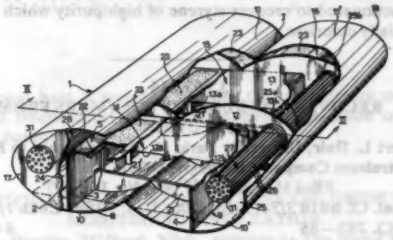
The center of the discharge table normally used with rotary hearth calciners is moved away from the center line of the rotary hearth so that the coke moves out from under the soaking pit, giving greater access and ease of installation for rabbles which plow the coke to the edge of the discharge table.

3,763,014

MULTI-STAGE FLASH EVAPORATOR

Diego Barba; Giuseppe Liuzzo, and Giovanni Tagliaferri, all of Rome, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

Filed Nov. 3, 1971, Ser. No. 195,361
Claims priority, application Italy, Nov. 12, 1970, 31629 A/70
Int. Cl. B01d *3/00, 1/28, 3/02, 3/10*
U.S. Cl. 202—173 4 Claims



An improved multi-stage flash evaporator for distilling sea water, which, in transverse profile, is symmetrical about a vertical central axis. The evaporator construction includes a horizontally disposed, longitudinally extending, continuous, tubular casing, whose profile, on each side of the axis, is substantially of the shape of an ellipse which is truncated towards one end by this axis; and an inverted U-shaped shell within the casing and extending along the length thereof. The lower edges of the shell are sealingly connected to the floor of the casing, While the top of the shell sealingly contacts the upper junction connecting the elliptically shaped zones of the casing. A plurality of vertical, spaced apart, transversely extending, apertured partitions subdivide the shell into a number of serially connected chambers, for the raw sea water to flow therethrough and evaporate therein. The outer casing and the inner shall define separate, condensation chambers which are positioned laterally on each side of the serially connected evaporation chambers, the distillate vapor flowing from the evaporation to the condensation chambers through droplet-separating filters housed in the top of the shell.

3,763,015

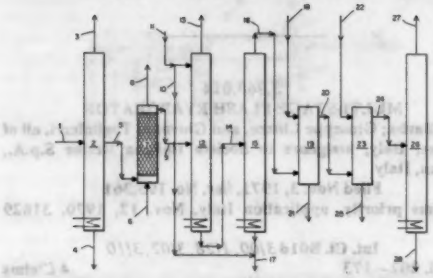
PROCESS FOR THE SEPARATION OF STYRENE FROM THERMALLY CRACKED PETROLEUM BY POLYMER INHIBITION AND EXTRACTIVE DISTILLATION

Hiroshi Morimoto, and Masanori Tatsumi, both of Kamakura, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed July 19, 1971, Ser. No. 163,586
Claims priority, application Japan, July 18, 1970, 45/62702
Int. Cl. C07c *15/10*; B01d *3/40*
U.S. Cl. 203—9 10 Claims

A process is provided for the separation of styrene from thermally cracked petroleum. In the process of this invention thermally cracked petroleum is initially distilled to recover the fraction boiling between 120°C and 160°C. This fraction is then subjected to extractive distillation with an organic polar solvent containing a nitrite polymerization inhibitor in which

the styrene is soluble. The solvent is removed and the styrene-containing fraction is thereafter treated with nitric acid after



which it is scrubbed with water or alkali. The resulting product is fractionated to recover styrene of high purity which is substantially colorless.

3,763,016

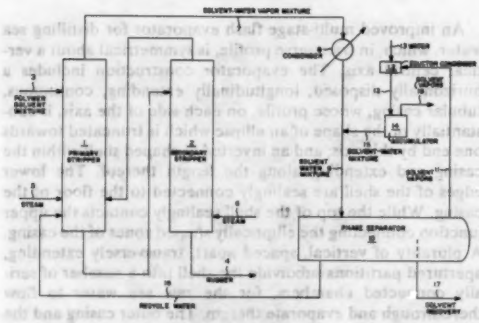
RECOVERY OF RUBBERY POLYMERS FROM SOLUTION

Robert L. Hair, University Park, N. Mex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 28, 1971, Ser. No. 148,097

Int. Cl. B01d *3/34, 3/38, 3/00, 3/14*; F28b ; C02b *1/04*

U.S. Cl. 203—85 **4 Claims**



A process for recovering solvent from the overhead product produced by steam stripping a mixture of solvent and polymer in which noncondensed solvent vapors are contacted with water and introduced into a reservoir from which the liquid solvent is recovered.

3,763,017

PROCESS OF INHIBITING DECOMPOSITION OF 1,1,1,2-TETRACHLOROETHANE

Correia Yves, Saint-Auban, and Clair Rene, Savigny sur Orge, both of France, assignors to Produits Chimiques PECHINEY-Saint Gobain, Neuilly-sur-Seine, France

Filed June 9, 1970, Ser. No. 45,249

Claims priority, application France, June 18, 1969, 6920314

Int. Cl. C07c *17/42, 17/00*

U.S. Cl. 203—6 **15 Claims**

This invention is addressed to a new and improved method for inhibiting the decomposition of 1,1,1,2-tetrachloroethane and an inhibited composition formed thereby wherein an inhibitor consisting essentially of an aliphatic aldehyde, an aromatic aldehyde, chlorinated derivatives of the foregoing aldehydes which are soluble in 1,1,1,2-tetrachloroethane with other chlorinated solvents, or cyclic trimers of aliphatic aldehydes and mixtures thereof, and an organic phosphorus compound are added to a solvent composition containing 1,1,1,2-tetrachloroethane.

3,763,018

PREVENTION OF FOULING IN HYDROCARBON SEPARATION

Paul Raff, Ludwigshafen; Gerhard Ritzert, Dannstadt, and Hans-Martin Weitz, Frankenthal, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Mar. 23, 1972, Ser. No. 237,546

Claims priority, application Germany, Apr. 1, 1971, P 21 15 858.7

Int. Cl. C07c *7/18, 69/52*

U.S. Cl. 203—9 **5 Claims**

A process for avoiding fouling in separating hydrocarbon mixtures containing unsaturated hydrocarbons at elevated temperatures using selective solvents in the presence of antifouling agents wherein a N-substituted N-nitrosohydroxylamine of the general formula

$$R-\underset{\displaystyle NO}{\underset{|}{N}}-OH$$

in which R is an aliphatic, cycloaliphatic or araliphatic hydrocarbon radical (which may bear inert radicals as substituents) and/or a salt thereof is used as an anti-fouling agent.

3,763,019

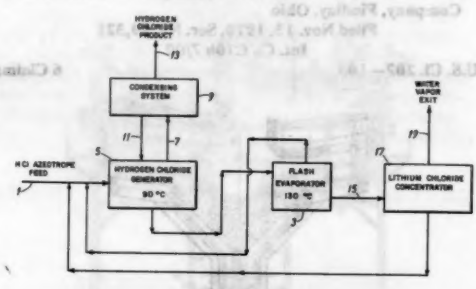
PROCESS FOR DEHYDRATING ACID HALIDE AZEOTROPES WITH LITHIUM SALTS

Anthony W. Yodis, Camillus, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 21, 1971, Ser. No. 135,974

Int. Cl. B01d *3/34*

U.S. Cl. 203—12 **14 Claims**



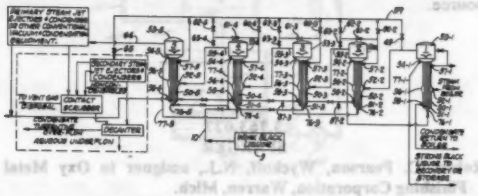
A process for dehydrating an aqueous solution of hydrochloric, hydrobromic or hydriodic acid having an initial concentration approximating its respective azeotrope, by mixing said solution with the lithium salt of the corresponding acid, stripping off anhydrous hydrogen halide and concentrating and recycling the residual lithium salt back to the mixing step.

3,763,020

TERPENE RECOVERY BY MULTI-EFFECT EVAPORATION WITH VENT VAPOR COMPRESSION

John Drew, and Robert Elliott Marks, both of Jacksonville, Fla., assignors to Envirotech Corporation, Salt Lake City, Utah

Filed Feb. 11, 1971, Ser. No. 114,651
Int. Cl. B01d *1/26*; D21c *11/00*; A21l *1/02*
U.S. Cl. 203—14 21 Claims



A process for recovering dispersed or solubilized terpenes from terpene-containing aqueous liquors during the multiple effect evaporative concentration of said aqueous liquors is disclosed. The terpenes are recovered by condensing uncondensed vent vapors from the "condensing vapor zone" of an evaporation effect being fed with vaporized terpene-containing aqueous liquors by raising the pressure on said uncondensed vent vapors so as to raise the dew point temperature of the terpene component. The temperature of the vent gases is also lowered below the dew point temperature to condense terpenes therefrom.

3,763,021

DISTILLATION PROCESS OF MONOMERS WITH THE ADDITION OF AN ANTIFOAM COMPOSITION

Kermit W. Householder, Tonawanda, N.Y., assignor to Dow Corning Corporation, Midland, Mich.

Filed May 17, 1971, Ser. No. 144,263
Int. Cl. B01b *1/04*
U.S. Cl. 203—20 6 Claims

An antifoam composition is disclosed which consists essentially of (1) 1 to 20 percent by weight of a silicone-glycol copolymer, (2) 65 to 98 percent by weight of a propylene glycol, and (3) 1 to 15 percent by weight of a hydrophilic silica which is preferably treated in situ. The composition is particularly useful in latexes.

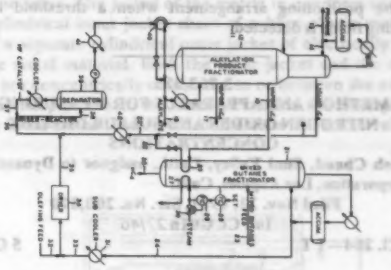
3,763,022

CONDENSING FRACTIONATOR SIDESTREAM VAPOR AS REBOILER HEAT SOURCE

Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 9, 1971, Ser. No. 161,108
Int. Cl. B01d *3/00*; C07c *3/50*
U.S. Cl. 203—25 4 Claims

A stream of vapor is continuously withdrawn from a fractionator column and passed directly to a heat exchange means in contact with the liquid in a second fractionator column. Heat is imparted to raise the temperature of the liquid in the fractionator and to condense the vapor stream withdrawn from the first fractionator. In a preferred embodiment isobutane vapor is withdrawn in a sidestream from an alkylation product fractionator and is condensed by imparting heat to the liquid in a fractionator which separates isobutane feed stock from a butane mixture wherein a controlled amount of additional heat is supplied to raise the temperature of the second fractionator sufficiently to effect separation of the mixed butane feed.



3,763,023

PURIFICATION OF CHLOROACETYL CHLORIDE BY AZEOTROPIC DISTILLATION

Lee H. Horsley, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 30, 1972, Ser. No. 257,833
Int. Cl. C07c *53/20*; B01d *3/36*
U.S. Cl. 203—63 5 Claims

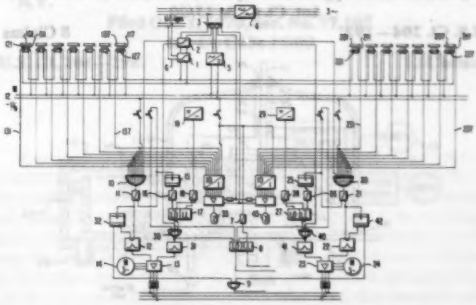
Monochloroacyl chloride can be separated efficiently from dichloroacetyl chloride by adding an azeotrope-forming agent to the mixture and distilling off the monochloro acid chloride azeotrope. Azeotrope formers have a boiling point of about 90°–130° C. and are hydrocarbons, halogenated hydrocarbons and aliphatic ethers.

3,763,024

PROCESS AND APPARATUS FOR CONTROLLING THE SPACING OF THE ELECTRODES OF ELECTROLYTIC CELLS

Fitz Engelmann, Ranzel; Johannes Knoch, Mondorf, and Christoph Viehweger, Ranzel, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Nov. 1, 1971, Ser. No. 194,309
Claims priority, application Germany, Oct. 31, 1970, P 20 53 589.1
Int. Cl. B01k *1/00*; C01d *1/14*; B01k *3/00*
U.S. Cl. 204—1 R 10 Claims



Process and apparatus for controlling the spacing of the anodes with respect to the cathode in an electrolytic cell in-

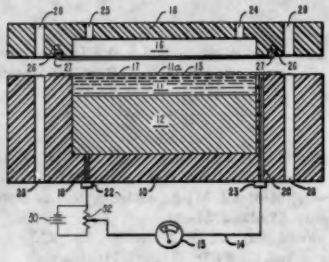
cluding a positioning arrangement for moving the anodes up and down in response to a control signal and means for generating the control signal by comparing the field generated by the bus bars carrying current to the anodes with the individual fields generated by field coils to which a current proportional to the total electrolysis current is supplied. A reed switch is responsive to the opposing fields and serves to actuate the positioning arrangement when a threshold in the resulting fields is detected.

3,763,025

METHOD AND APPARATUS FOR MEASURING NITROGEN OXIDES AND SULFUR DIOXIDE CONCENTRATIONS

Ramesh Chand, Simi Valley, Calif., assignor to Dynasciences Corporation, Los Angeles, Calif.

Filed Nov. 22, 1971, Ser. No. 200,870
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T **5 Claims**



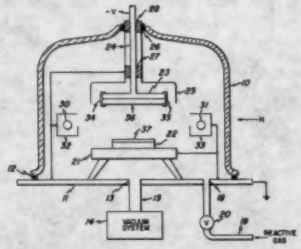
Nitrogen oxide and sulfur dioxide concentrations present in a gaseous mixture are rapidly and continually monitored by measuring the current passing between an inert metallic sensing electrode and a counter electrode which electrodes are in contact with an aqueous electrolyte solution and at which sensing electrode the oxides are electrooxidized. The sensing electrode is composed of an inert metal, whereas the counter electrode is composed of an electroactive lead sulfate which is electrochemically reduced when electrically interconnected with the sensing electrode in the presence of the aqueous electrolyte solution. A variable voltage source maintains the potential at the sensing electrode at the desired level.

3,763,026

METHOD OF MAKING RESISTOR THIN FILMS BY REACTIVE SPUTTERING FROM A COMPOSITE SOURCE

Linus F. Cordes, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 887,440, Dec. 22, 1969, Pat. No. 3,703,456. This application Sept. 24, 1971, Ser. No. 183,688
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **8 Claims**



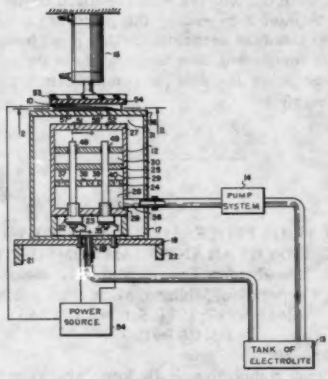
A method of making high resistivity thin film resistors by reactively sputtering a composite source onto a substrate is described. The composite source comprises a first material selected from the group consisting of chromium, silicon, beryllium, aluminum and magnesium and a second material selected from the group consisting of molybdenum, tantalum, tungsten, gold, silver, platinum, osmium and iridium. In the presence of a reactive gas such as nitrogen, the first materials form a high resistivity nitride on the substrate and the second materials either form a low resistivity nitride on the substrate or are non-reactive with the nitrogen and remain in their elemental states. The resulting thin films have resistivities ranging between the high resistivity nitrides and the low resistivity nitrides depending upon the composition of the composite source.

3,763,027

SPARGER

Robert C. Pearson, Wyckoff, N.J., assignor to Oxy Metal Finishing Corporation, Warren, Mich.

Filed Oct. 12, 1971, Ser. No. 188,028
Int. Cl. B23p *1/02*; B01k *3/00*
U.S. Cl. 204—224 R **6 Claims**



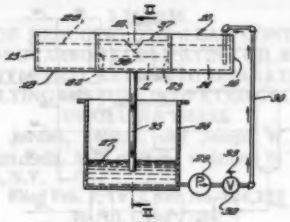
A machine for metal plating selected areas of a conductive workpiece and a sparger employed therein is disclosed. The machine includes a main frame having the sparger removably mounted therein and an hydraulic press for holding the workpiece securely against the sparger during a plating cycle. The sparger has an inlet port in a first chamber thereof removably connected to a source of electrolyte under pressure. A top plate of the first chamber has a pair of holes for each of the selected areas to be plated on the conducting workpiece. The total area of the holes in the top plate is small compared with the cross-sectional area of the first chamber. This provides a flow of electrolyte from the first chamber to a second chamber through the holes which is relatively uniform through each of the holes. An upper wall of the second chamber acts as a baffle plate being solid opposite to the holes in the upper wall of the first chamber and having cusps therethrough so that the fluid flows therearound into a third chamber. The third chamber has collimating holes in the upper wall thereof to provide a collimated stream of electrolyte to the workpiece to be plated. A source of electric current is connected to terminals on the sparger to provide positive and negative terminals during the plating cycle.

3,763,028

VEE NOTCH WEIR LEVEL CONTROL SYSTEM

James N. Rverson, Oceanport, and Theodore R. Wall, Elizabeth, both of N.J., assignors to Oxy Metal Finishing Corporation, Warren, Mich.

Filed July 19, 1967, Ser. No. 654,436
Int. Cl. B01k 3/00
U.S. Cl. 204—237 8 Claims



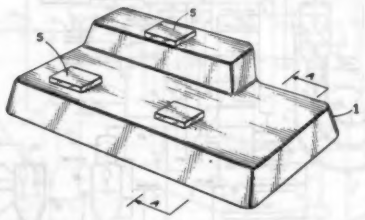
In the illustrated embodiment the level of a plating solution is adjustably determined by metering flow to the plating tank with a valve equipped with a micrometer scale indicating the valve orifice area opening and providing for the continuous overflow from the plating tank through a V notch weir. Observed micrometer readings on the metering valve will produce corresponding precise and predictable levels of the plating solution over the height of the V notch.

3,763,029

CHEMICAL EQUIPMENT STRUCTURES

William Snyder Karn, 518 Dickson Ave., Pittsburgh, Pa.

Filed Oct. 19, 1971, Ser. No. 190,521
Int. Cl. C23b 5/70; B01k 1/00, 3/00
U.S. Cl. 204—279 5 Claims



An insulator to be used on electrolytic copper refining cells to support the bus bars and electrodes is constructed of a thin sheet of polyvinylchloride thermoformed into a pan shaped cavity into which is cast a mixture of polyester resin and quartz sand. After casting, the piece is inverted and strips of more refractory material such as chlorinated polyvinylchloride are cemented onto the insulator where the hot bus bar will contact the insulator in service.

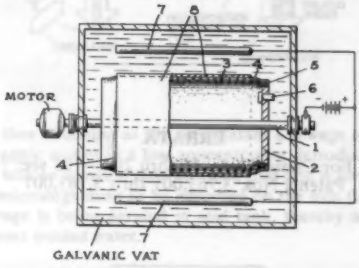
3,763,030

APPARATUS FOR THE PRODUCTION OF SEAMLESS HOLLOW CYLINDERS

Peter Zimmer, Engelhardstrasse 7, Kufstein, Austria

Continuation-in-part of Ser. No. 697,464, Jan. 12, 1968, abandoned. This application Aug. 2, 1971, Ser. No. 168,062
Int. Cl. C23b 7/00, 7/02; B01k 1/00
U.S. Cl. 204—281 6 Claims

The invention relates to a matrix device for making seamless hollow cylinders for use as cylindrical screen printing stencils. A cylindrical metal film is electrolytically formed in either unperforated or a perforated form upon an expandable and contractible hollow, cylindrical rotary matrix. The metal film is subsequently removed from the matrix. The cylindrical hollow matrix consists of a cylindrical jacket disposed between endpieces and is provided inside, at least in the jacket zone, with a gas or liquid tight hollow space, accessible by at least one valve. The jacket of the matrix in one form consists of a cylindrical inner jacket sheet of rubber elastic material and of a separate cylindrical outer jacket of electrically conductive metal material. Both the inner jacket and the outer jacket are concentrically connected to or between the axially opposed endpieces with the outer jacket and the inner jacket only in loose contact intermediate the ends thereof. A valve is



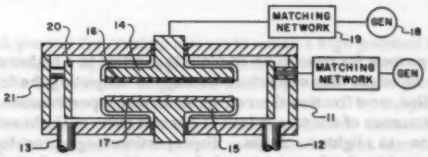
provided usually in an end piece through which pressurized fluid is admitted or allowed to escape, as required. In another form, only an outer metallic foil like jacket is sealingly attached in a fluid-tight manner to the endpieces and is of such character to be slightly expandable while maintaining a smooth outer surface on which the electrolytically deposited cylinder is formed in an endless cylindrical manner, and is subsequently capable of being deflated sufficiently to permit easy removal of the electro-deposition. Suitable screen patterns can be formed simultaneously by applying insulated sleeves having predetermined screen aperture patterns to the metallic foil matrix jacket. The expandability characteristic enables the formation of relatively thicker perforated rotary printing screens than have been available by previously known process and apparatus.

3,763,031

RF SPUTTERING APPARATUS

Kenneth B. Scow, and James W. Tuttle, both of Wappingers Falls, N.Y., assignors to Cogar Corporation, Poughkeepsie, N.Y.

Filed Oct. 1, 1970, Ser. No. 77,105
Int. Cl. C23c 15/00
U.S. Cl. 204—298 12 Claims



An r. f. sputter coating apparatus includes an electrically isolated sputter shield surrounding the glow discharge region

between anode and cathode. An r. f. signal may be applied to the shield to drive the glow discharge more positive with respect to anode potential. In addition, when sputtering conductive materials, a d. c. potential may be applied to the shield. When applying r. f. to the shield a variable inductance may be placed in parallel with the shield so as to form a parallel resonant circuit and maintain potential between shield and ground a maximum. A matching network is provided to assure maximum power transfer from the r.f. generator into the discharge. The network may include a vacuum capacitor formed within the dark space of the cathode on the cathode back side. Automatic electronic tuning of the matching network can be provided. A reactance tube variable network connected between the r. f. output and the matching network compensates for load circuit changes during sputtering. The shield may also be used to advantage in sputter etching equipment.

ERRATA

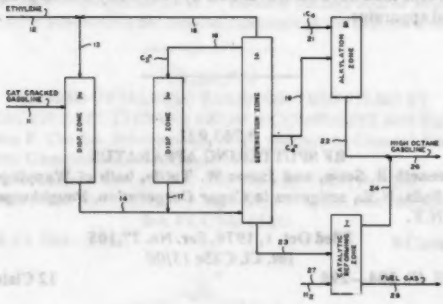
For Classes 204—16 thru 204—195 see:
Patents Nos. 3,763,001 thru 3,763,007

3,763,032

INCREASING THE OCTANE OF OLEFINIC GASOLINES USING DISPROPORTIONATION, ALKYLATION AND REFORMING STEPS

Robert L. Banks, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 10, 1971, Ser. No. 206,735
Int. Cl. C10g *7/00, 37/06*
U.S. Cl. 208—93 **7 Claims**



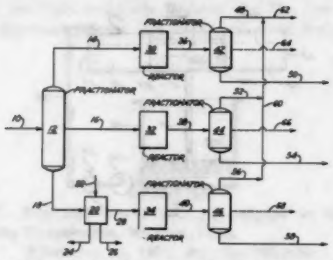
A process for converting an olefinic gasoline to a higher octane value gasoline comprises the steps of subjecting the feed gasoline, or a fraction thereof, to olefin disproportionation in the presence of added ethylene to convert some of the heavier olefins to lighter olefins, disproportionating propylene produced by the first step to ethylene and butenes, alkylating the butenes with isobutane, catalytically reforming a C_5+ fraction from the first step, and recombining the alkylate and reformate with unconverted gasoline fractions to form the higher octane gasoline.

3,763,033

LUBE OIL HYDROTREATING PROCESS

Harry C. Stauffer, Cheswick, and James R. Strom, O'Hara, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 20, 1971, Ser. No. 190,959
Int. Cl. C10g *13/00, 37/02*
U.S. Cl. 208—78 **3 Claims**



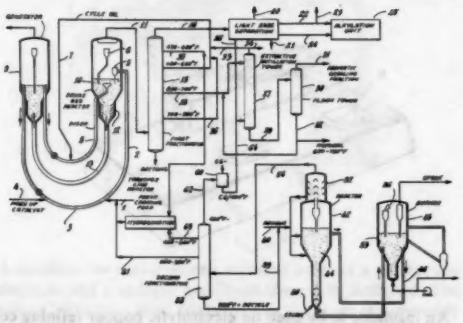
A process for producing lubricating oils in order to obtain lubricating oils of enhanced viscosity index by hydrotreating various crude lubricating oil fractions separately.

3,763,034

PROCESS FOR THE PREPARATION OF HIGH OCTANE GASOLINE FRACTIONS

Terence K. Kett, Boonton, and Richard A. Reitz, Mendham, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Feb. 3, 1972, Ser. No. 223,094
Int. Cl. C10g *37/04, 37/06*
U.S. Cl. 208—78 **18 Claims**



High-octane gasoline fractions are prepared by an integrated catalytic-cracking process/thermal-cracking process operation. More particularly, high-octane aromatic petroleum fractions are prepared by treatment of the effluents from a catalytic-cracking process and a thermal-cracking process.

3,763,035

REFORMING WITH RHENIUM-PROMOTED CHROMIA CATALYSTS

Albert L. Hensley, Jr., Munster; Thomas D. Nevitt, Valparaiso, and John A. Mahoney, Griffith, all of Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Aug. 25, 1970, Ser. No. 66,796
Int. Cl. C10g *37/02*; B01j *11/06*
U.S. Cl. 208—136 **12 Claims**

The catalyst comprises a small amount of rhenium and the oxides of chromium on a catalytically active alumina. The

catalyst may be promoted by an oxide of an alkali metal, an oxide of an alkaline earth metal, or mixtures thereof. The catalyst is very efficient for the dehydrocyclization of paraffins and may be used in a process for reforming a petroleum hydrocarbon feedstock containing a substantial amount of paraffins, which process comprises contacting the hydrocarbon feedstock in a reforming reaction zone under reforming conditions and in the presence of hydrogen with the catalyst of the present invention.

3,763,036

METHOD OF REDUCING THE LEAD CONTENT OF A USED HYDROCARBON LUBRICATING OIL BY ADDING METHYLETHYL KETONE TO SEPARATE THE RESULTING MIXTURE INTO A COAGULATED INSOLUBLE PHASE

Terence B. Jordan, Fishkill, and Joseph W. McDonald, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Feb. 7, 1972, Ser. No. 224,222
Int. Cl. C10g *27/00*
U.S. Cl. 208—180 **4 Claims**

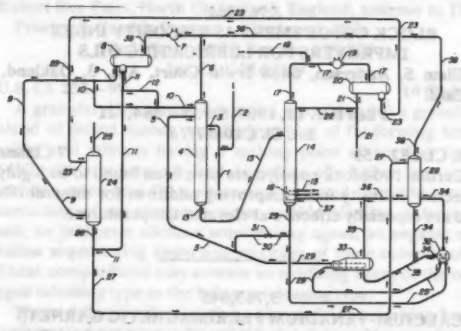
A method of reducing the lead content of a used hydrocarbon lubricating oil comprising mixing a used hydrocarbon lubricating oil having a lead content of at least about 0.5 wt. percent with methylethylketone, separating the resulting mixture into coagulated insoluble layer and a clarified hydrocarbon lubricating oil-methylethylketone layer, said mixing and said separating conducted under anhydrous conditions at a temperature between about 65° and 95°F.

3,763,037

AROMATIC HYDROCARBON

Herbert L. Thompson, Park Ridge, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 6, 1971, Ser. No. 140,776
Int. Cl. C07c *7/08*
U.S. Cl. 208—313 **11 Claims**



Loss of aromatics in the raffinate removed from an extractive distillation zone is diminished by reboiling a dilute water-solvent mixture with the extractive distillation lean solvent feed.

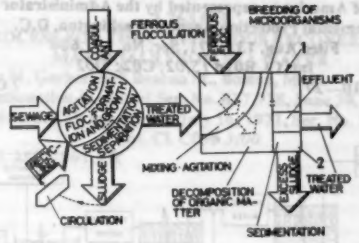
3,763,038

PROCESS FOR PURIFYING WATER THAT CONTAINS ORGANIC MATTER

Yasunao Misaka, Mitsuo Kuriyama, both of Yokohama, and Tsuneo Mukai, Tokyo, all of Japan, assignors to Kurita Water Industries Limited, Osaka, Japan

Filed Mar. 29, 1971, Ser. No. 128,961
Claims priority, application Japan, Apr. 10, 1970, 45/30595; Oct. 23, 1970, 45/93312
Int. Cl. C02c *1/06*
U.S. Cl. 210—4 **13 Claims**

A process for purifying water that contains organic matter which comprises mixing a coagulant consisting of either a ferric salt alone or a ferrous salt and an oxidant into sewage that contains organic matter in a high concentration, causing the coagulant-containing sewage to flow into a flocculating region, agitating the sewage for floc formation and growth, separating the floc in a sedimentation region into effluent and sludge, thus obtaining as the supernatant a sewage that contains organic matter in a low concentration, introducing said sewage into an aeration tank in which iron floc is formed, allowing microorganisms to be adsorbed on the iron floc while the sewage is being aerated in said tank, thereby to obtain highly pure treated water.

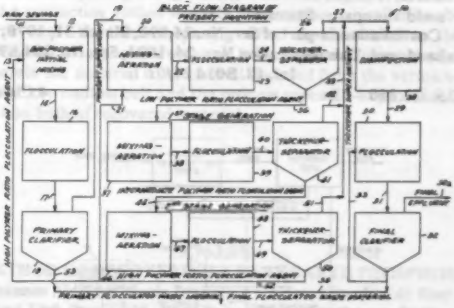


3,763,039

METHOD OF TREATING SEWAGE USING HIGH POLYMER RATIO FLOCCULATION AGENT BIOLOGICALLY PRODUCED IN SITU

George E. Wilson, Sterling, Ill., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Apr. 10, 1972, Ser. No. 242,344
Int. Cl. C02b *1/20*; C02c *1/06*
U.S. Cl. 210—6 **7 Claims**



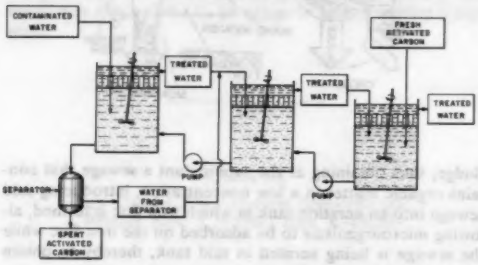
A process for treating sewage in which a high polymer ratio flocculation agent biologically produced in situ is used to flocculate the colloidal suspended solids upstream of the primary clarifier. The flocculation agent is produced by subjecting microorganisms capable of generating polymeric material to a high food content environment in an aeration tank into which supernatant from the primary clarifier is delivered and then subjecting the microorganisms to a low food content environment, as a consequence of which polymeric material is generated through the extracellular activity of the microorganisms.

3,763,040

PROCESSES FOR REDUCING THE ORGANIC-CARBON CONTENT OF WATER CONTAMINATED WITH ORGANIC COMPOUNDS BY CONTINUOUS COUNTERCURRENT MULTISTAGE TREATMENT WITH ACTIVATED CARBON

Winfried George Timpe, Pensacola, and Edward Wilkerson Lang, Gulf Breeze, both of Fla., assignors to The United States of America as represented by the Administrator of the Environmental Protection Agency, Washington, D.C.

Filed Aug. 13, 1971, Ser. No. 171,604
Int. Cl. B01d *15/02*; C02c *5/02*
U.S. Cl. 210—27 7 Claims



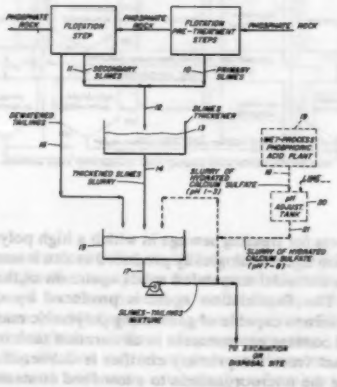
Processes for the treatment of water that is contaminated with organic compounds, in which the contaminated water is subjected to a continuous countercurrent multistage treatment with particulate activated carbon in a plurality of tanks in each of which a high slurry density, for example, between 50 and 200 grams per liter of the slurry, is maintained. Particles of activated carbon, intermediate in size between those used heretofore in such processes for the reduction of the organic-carbon content of such wastewaters, are advantageously used in these processes. The processes are particularly useful for rendering industrial wastewaters suitable for resuse.

3,763,041

PROCESS OF REMOVING WATER FROM SLIMES

Charles Calvin Cook, Lakeland, and Erwin Mathew Haynsworth, Tampa, both of Fla., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 24,090, March 31, 1970, abandoned. This application Nov. 24, 1971, Ser. No. 201,892
Int. Cl. B01d *21/01*
U.S. Cl. 210—42 4 Claims



A process for enhancing the rate at which water is removed from the waste slimes of ore processing operations, particularly phosphate rock processing, in which waste tailings from the ore processing are admixed with the slimes to release water from the mixture. The slimes contain a solid content of from 10 to about 25 percent by weight and tailings are added to produce a slimes-tailing mixture which contains, on a dry basis, from about 60 percent to 99 percent by weight tailings.

3,763,042

CLAY-THICKENED GREASE CONTAINING SYNERGISTIC ADDITIVE COMBINATION

Joseph A. Cannon, New Orleans, and Richard L. Deck, Metairie, both of La., assignors to Shell Oil Company, New York, N.Y.

Filed Jan. 13, 1971, Ser. No. 106,269
Int. Cl. C10m *5/22*, *5/14*
U.S. Cl. 252—21 5 Claims

Clay,Thickened grease containing synergistic proportions of zinc dialkylnapththalene sulfonate, an ester of an aliphatic monohydric alcohol and an aliphatic monocarboxylic acid, and zinc napththenate.

3,763,043

CHALCOGENIDES INTERCALATED WITH A MIXTURE OF AN ORGANIC NITROGEN COMPOUND AND SULFUR

Arthur H. Thompson, New Province, N.J., assignor to Syva Company, Palo Alto, Calif.

Filed Jan. 31, 1972, Ser. No. 222,315
Int. Cl. C10m *7/34*, *7/32*, *7/30*
U.S. Cl. 252—31 21 Claims

Novel intercalated chalcogenides are prepared having high crystal regularity and enhanced thermal stability by intercalating an intercalatable metal chalcogenide with an organic nitrogen compound in the presence of sulfur. Said intercalated chalcogenides may be used as solid lubricants, superconductive materials, and catalysts.

3,763,044

BLOCK COPOLYMERS AS VISCOSITY INDEX IMPROVERS FOR LUBRICATING OILS

William S. Anderson, 6408 Irwin Court, Apt. 3, Oakland, Calif.

Filed Dec. 12, 1969, Ser. No. 884,721
Int. Cl. C10m *1/18*
U.S. Cl. 252—59 7 Claims

Certain two-block copolymers have been found to be highly effective viscosity index improving additives for mineral oils and are especially effective at elevated temperatures.

3,763,045

CALCIUM-VANADIUM FERRIMAGNETIC GARNETS

Hideo Takamizawa, and Keiichi Yotsuyanagi, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Minato-ku, Tokyo, Japan

Filed Apr. 1, 1971, Ser. No. 130,343
Claims priority, application Japan, Apr. 3, 1970, 45/28948; July 1, 1970, 45/57966
Int. Cl. C04b *35/50*
U.S. Cl. 252—62.57 2 Claims

Provided are magnetic materials suitable for use in microwave circuit elements and having excellent properties such as a very low value of the ferromagnetic resonance linewidth, high curie temperature, a suitably controllable value of the saturation magnetization and improved temperature stability of the saturation magnetization. Such materials are obtained by substituting Ca ions located on the 24*c* site and Fe ions on the 16*a* site in calcium-vanadium garnets with Y ions and Sn ions, respectively, or by further substituting the ions located on the 24*d* site in the calcium-vanadium garnets thus modified with Ge ions.

3,763,046

HYDRAULIC FLUIDS

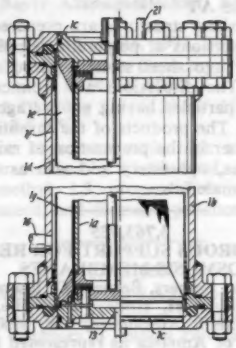
Kenneth Michael Beazley, and Margaret Climpson, both of Cornwall, England, assignors to English Clays Lovering Pochin & Company Limited, Cornwall, England

Filed Feb. 2, 1971, Ser. No. 111,890

Claims priority, application Great Britain, Feb. 10, 1970, 6,387/70

Int. Cl. C09k 3/00

U.S. Cl. 252—75 12 Claims



A hydraulic fluid suitable for use in a tube pressure filter, the hydraulic fluid comprising an aqueous solution of an inorganic salt and an organic material.

3,763,047

DETERGENT COMPOSITIONS

Robert Roy Fairs, North Umberland, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 3, 1971, Ser. No. 139,809

Int. Cl. C11d 7/54

U.S. Cl. 252—99 14 Claims

A granular detergent composition containing (a) a granular blend of mixed mono- and di-glycerides of fat-forming fatty acids, said mixture having a melting point of not less than 54°C. with a polyoxyethylene derivative of a higher fatty acid sorbitan ester; and (b) a compound selected from the group consisting of an inorganic water-soluble alkaline detergent salt, an inorganic alkaline sequestering agent, an organic alkaline sequestering agent and mixtures of these compounds. These compositions may contain an oxidizing agent of the oxygen releasing type or the halogen releasing type.

These detergent formulations are useful for washing hard surfaces and are especially suitable for dishwashing machines and the like.

3,763,048

STABILIZATION OF HALOGENATED HYDROCARBONS

Akio Nishihara, and Shizuo Nakamura, both of Urawa, Japan, assignors to Asahi Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1971, Ser. No. 140,268

Claims priority, application Japan, Aug. 31, 1970, 45/75608; Dec. 9, 1970, 45/108520

Int. Cl. C09d 9/00; C11d 7/50; C23g 5/02

U.S. Cl. 252—171 8 Claims

This invention relates to the stabilization of halogenated hydrocarbons, and, more particularly, to the stabilization of methyl chloroform by the addition thereto of at least one sulfur-containing heterocyclic compound selected from 1,3-dithiolane, 1,3-oxathiolane and certain thiirane compounds in the presence or absence of at least one auxilliary stabilizing additive selected from acetonitrile, nitromethane, glycidol, 1,3-dioxolane or 1,4-dioxane.

3,763,049

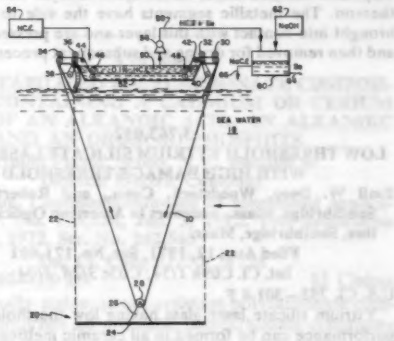
PROCESS FOR THE CONTINUOUS RECOVERY OF MATERIALS FROM SEA WATER

Arthur M. Gerber, 508 Beacon St., Boston, Mass.

Continuation-in-part of Ser. No. 837,938, June 30, 1969, abandoned. This application July 16, 1971, Ser. No. 163,362

Int. Cl. C09b 3/00

U.S. Cl. 252—301.1 R 21 Claims



An apparatus and process for the recovery of materials from sea water and brine wherein valuable constituents of sea water and brine, such as ionic substances, are recovered by employing an endless belt of a supported activated clay-mineral material characterized by a sheet-silicate structure therein; for example, vermiculite. Such a belt is passed through a series of stations comprising an activating station for the vermiculite, and a contacting station wherein the activated vermiculite absorbs into its laminar-spacing area the material to be recovered from the sea water or brine, and an elution station wherein the material so recovered is eluted from the vermiculite on the endless belt and the process repeated to provide an elution bath of recovered material.

3,763,050

METHOD OF RECOVERING A RARE EARTH PHOSPHOR

Johannes Aloysius Maria Dikhoff; Franciscus Jacobus de Boer, and Dirk Barneveld, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 11, 1971, Ser. No. 152,437

Claims priority, application Netherlands, June 13, 1970, 7008683

Int. Cl. C09k 1/10, 1/14, 1/44

U.S. Cl. 252—301.4 R 5 Claims

A method of recovering a rare earth phosphor from a mixture which contains this phosphor and at least one sulphide and/or selenide of zinc and/or cadmium. The mixture is treated in an aqueous alkaline solution which contains a hypohalogenite and whose pH is larger than 12. The rare earth phosphor is subsequently separated from the liquid and washed with water, optionally after rinsing with a diluted acid.

3,763,051

PHOSPHOR SUSPENSION FOR DIP-COATING METALLIC SEGMENTS

Kenneth Speigel, and Robert F. Wilson, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed June 21, 1971, Ser. No. 155,235
Int. Cl. C09k 1/02
U.S. Cl. 252—301.3 R 1 Claim

A phosphor suspension for dip-coating metallic segments of a display device to provide a layer of phosphor thereon. The suspension is an aqueous solution containing a first preliminary binder such as polyvinyl alcohol, a second permanent binder such as sodium or potassium silicate, a given quantity of phosphor particles, a bubble eliminating agent selected from the group of lower primary alcohols having from one to five carbon atoms, a wetting agent such as sodium oleate, and a high-boiling solvent such as ethylene glycol. The suspension is applied to a suitable substrate such as a flexible sheet of vinyl and allowed to drain to leave a layer of suspension thereon. The metallic segments have the side to be coated brought into contact with this layer and are pressed thereinto and then removed for drying and subsequent processing.

3,763,052

LOW THRESHOLD YTTRIUM SILICATE LASER GLASS WITH HIGH DAMAGE THRESHOLD

Emil W. Deeg, Woodstock, Conn., and Robert E. Graf, Southbridge, Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Aug. 12, 1971, Ser. No. 171,401
Int. Cl. C09k 1/54; C03c 3/28, 3/04
U.S. Cl. 252—301.4 F 3 Claims

Yttrium silicate laser glass having low thershold and high performance can be formed in all ceramic melting units. The glass is free of metallic inclusions and semi-conductive inclusions. The laser glass is doped with trivalent neodymium ions.

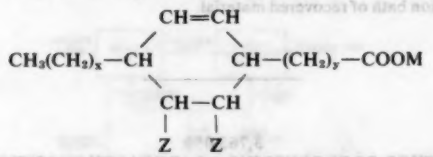
3,763,053

ALKANOLAMIDES OF DICARBOXYLIC ACID

Alan M. Bills, Summerville, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Mar. 10, 1972, Ser. No. 233,709
Int. Cl. B01f 17/22
U.S. Cl. 252—357 5 Claims

Alkanolamides of this invention are made by condensing a dicarboxylic acid of the following formula:



wherein x and y are integers from 3 to 9, x and y together equal 12, Z is a member of the group consisting of hydrogen and COOM, with one Z of each moiety, and M and M_1 are selected from the group consisting of hydrogen, sodium, potassium, lithium, and mixtures thereof, with either monoethanolamine, diethanolamine or isopropanolamine. The bisalkanolamides, dialkanolamides and monoalkanolamides formed at a ratio of 2:1 alkanolamine:carboxyl moiety are excellent detergents and wetting agents. The bisalkanolamides, dialkanolamides and monoalkanolamides of this invention made at a 1:1 ratio of alkanolamine-to-carboxyl moiety are used as foam, wetting and viscosity boosters. When small amounts of these alkanolamides are added to soaps, the formation of insoluble soaps in hard water is hindered and the resulting insoluble soaps are kept dispersed.

3,763,054

PROCESS FOR THE PRODUCTION OF MICROPOROUS POLYURETHANE(UREA)SHEET STRUCTURES PERMEABLE TO WATER VAPOR

Artur Reischl and Dieter Dieterich, Leverkusen, and Harro Witt, Hackenbroich, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of application Ser. No. 723,929, Apr. 24, 1968. This application Dec. 7, 1970, Ser. No. 95,960
The portion of the term of the patent subsequent to Nov. 23, 1988, has been disclaimed
Int. Cl. B29d 27/08; C08g 22/00, 53/08
U.S. Cl. 260—2.5 AY 7 Claims

Microporous sheet structures are prepared by converting aqueous dispersions of polyurethane polymers having salt-type groups into sheet structures and melt sintering the structures. The dispersions are sedimenting and redispersible, the particles having an average particle size above about 5μ. The products of the invention are useful as artificial leather in the preparation of raincoats, handbags, belts, shoes, upholstery and also as vibration and sound damping materials.

3,763,055

MICROPOROUS SUPPORT FOR REVERSE OSMOSIS MEMBRANES

Le Roy A. White, Somers, Bernard O. Baum, West Hartford, and William H. Holley, Rockville, Conn., and Harold E. Podall, Alexandria, Va., assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed July 7, 1971, Ser. No. 160,573
Int. Cl. C08f 29/18, 47/08
U.S. Cl. 260—2.5 M 9 Claims

A microporous support structure for reverse osmosis membranes is prepared by compounding (1) a water-insoluble thermoplastic resin from the group consisting of polyvinyl chloride, vinyl chloride-propylene copolymer and a blend of polyvinyl chloride and vinyl chloride-propylene copolymer, (2) polyvinyl methyl ether and (3) a surfactant, forming the resulting composition into a suitable shape and extracting with water to remove a substantial portion of the polyvinyl methyl ether and surfactant, thereby forming a microporous structure.

3,763,056

POROUS POLYMERIC COMPOSITIONS, PROCESSES AND PRODUCTS

Gunther Will, 10–12 Zimmerstr., 61 Darmstadt, Germany

Continuation-in-part of abandoned applications Ser. No. 874,024 and Ser. No. 874,044, both Nov. 4, 1969. This application June 2, 1971, Ser. No. 149,317
Int. Cl. C08f 47/08, 47/18
U.S. Cl. 260—2.5 L 29 Claims

Various shaped products; methods of making shaped thermoset water-in-oil emulsions with polymerizable monomer, water-in-oil emulsifier, water-soluble wetting agent (in an amount less than that required to break the emulsion) and pulverulent solid polymer which is distributed throughout the emulsion and which is at least swellable in the oil phase; and processes for producing ceramic articles.

3,763,057

FLAME RESISTANT ISOCYANURATE FOAMS CONTAINING RED PHOSPHOROUS

Hans Joachim Diehr, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 19, 1971, Ser. No. 190,675
Claims priority, application Germany, Oct. 20, 1970, P 20 51 304.6
Int. Cl. C08g 22/44, 33/02, 51/56
U.S. Cl. 260—2.5 AW 7 Claims

Foam resins which contain isocyanurate groups are provided as well as a process for preparing them by polym-

erizing polyisocyanates in the presence of isocyanate polymerizing catalysts and blowing agents, optionally in the presence of stabilizers, auxiliary agents and less than equivalent quantities of compounds which contain active hydrogen atoms, characterized in that polymerization is carried out with the addition of red phosphorus.

3,763,058

POLYURETHANE ELASTOMERS WITH HIGH AFFINITY FOR DYES

Harald Oertel, Odenthal-Globusch, Helmut Reiff, Cologne, and Dieter Dieterich, Leverkusen, Germany, assignors to Bayer Aktiengeselschaft, Leverkusen, Germany

No Drawing. Filed Nov. 26, 1971, Ser. No. 202,670

Claims priority, application Germany, Nov. 27, 1970, P 20 58 502.8

Int. Cl. C08g *22/16, 22/44, 22/48*

U.S. Cl. 260—2.5 AY **16 Claims**

Polyurethane elastomers with high affinity for dyes which are characterised by a content of certain 2-alkyl-2-dialkylaminomethyl - 1,3 - propane-diols or alkoxylated derivatives thereof, and filaments produced therefrom.

3,763,059

POLYMER PARTICULATING PROCESS

Donald G. Needham and Luther O. Myers, Jr., Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 29,633, Apr. 17, 1970. This application Mar. 27, 1972, Ser. No. 238,535

Int. Cl. C08f *29/04, 29/06, 47/10*

U.S. Cl. 260—2.5 B **17 Claims**

A process for particulating a polymer material by adding specific volumes of specific particulating materials such as stearic acid, oleylamide, erucylamide, and mixtures thereof to a fluxed mass of the polymer and blending said polymer and particulating material for less than about a specific time limit.

3,763,060

STARCH XANTHATE-POLYAMIDE-POLYAMINE INTERPOLYMER PAPER STRENGTH ADDITIVES

George Earle Hamerstrand, Peoria, and Merle E. Carr, Chillicothe, Ill., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed June 9, 1972, Ser. No. 261,496

Int. Cl. C08b *25/02*

U.S. Cl. 260—9 **6 Claims**

Crosslinked starch-polyamide-polyamine interpolymers are prepared and described. Wet- and dry-tensile, dry-burst, and concora crush strengths of paper products, prepared from both acid and alkaline pulp furnishes, are significantly increased by the wet-end addition of the interpolymers.

3,763,061

NITROCELLULOSE-MODIFIED URETHANE COATING COMPOSITIONS AND THEIR USE IN FINISHING LEATHER

Sheldon N. Lewis, Willow Grove, and Matthew R. Yunaska, Warminster, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed July 12, 1971, Ser. No. 161,987

Int. Cl. C08g *41/04*

U.S. Cl. 260—13 **15 Claims**

Compositions comprising nitrocellulose and an isocyanate-terminated prepolymer of a polyisocyanate with an aliphatic polyol are useful as coating compositions, particularly in treating leather and leather substitutes.

3,763,062

NON-CRATERING FUSIBLE POLYESTER-CELLULOSE ESTER COATING COMPOSITION

James D. Hood, Blountville, and James G. Stranch, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 50,928, June 29, 1970, now Patent No. 3,654,198. This application Jan. 4, 1972, Ser. No. 215,404

The portion of the term of the patent subsequent to Apr. 4, 1989, has been disclaimed

Int. Cl. C08b *21/08;* **C03c** *17/28;* **C08g** *51/36*

U.S. Cl. 260—16 **9 Claims**

A polyester coating composition including a linear polyester, such as poly(1,4-cyclohexanedimethylene-40 mole percent terephthalate-60 mole percent isophthalate), cellulose acetate butyrate, a plasticizer, and optionally a stabilizer and/or pigment. The coating can be applied to a heatable substrate in powder form and caused to fuse by application of heat to produce a smooth, non-cratered surface.

3,763,063

COLOR-STABILIZED POLYCARBONATE COMPOSITION CONTAINING A CADMIUM OR CERIUM SALT OF AN ALKANOIC ACID, AN ALKANOIC ACID AND AN ORGANIC PHOSPHITE

Arnold Factor, Scotia, N.Y., assignor to General Electric Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 215,136, Jan. 3, 1972. This application June 14, 1972, Ser. No. 262,565

Int. Cl. C08g *51/56, 51/58*

U.S. Cl. 260—18 TN **12 Claims**

A thermally stable, streak-resistant polycarbonate composition comprises an aromatic polycarbonate containing a stabilizing amount of a mixture of (a) a cadmium or certain salt of an alkanoic acid, (b) an alkanoic acid, and (c) an organic phosphite.

3,763,064

POLYESTER RESIN COMPOSITIONS USEFUL AS DURABLE BODY OR HAND BUILDERS FOR TEXTILE MATERIALS

Arnold James Soliday, Charlotte, N.C., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 94,169, Dec. 1, 1970. This application Mar. 13, 1972, Ser. No. 234,298

Int. Cl. C08g *17/10, 17/16, 37/34*

U.S. Cl. 260—21 **8 Claims**

Compositions which are useful as body or hand builders for textile materials, and which are durable to laundering. The compositions are aqueous dispersions of polyester resin with nonionic or anionic surfactants and are applied to cellulosic fabrics together with a thermosetting, aminoplast resin. The polyester resins are products of the reaction of a lower alkylene glycol with a mixture of three polybasic acids, viz (1) an aromatic dibasic carboxylic acid, (2) a polymeric product of a long chain polyunsaturated acid, and (3) a lower unsaturated aliphatic acid.

3,763,065

THIXOTROPIC COMBINATION

Ernst Herrmann, Emmerich-Borghees, Germany, assignor to Hager & Kassner KG, Hamm, Germany

No Drawing. Filed Sept. 16, 1970, Ser. No. 72,820

Int. Cl. C08g *41/04*

U.S. Cl. 260—22 TN **9 Claims**

High degree of thixotrophy is provided in a hardening resin made by mixing a first liquid (I) consisting essen-

tially of (a) polyhydroxy compounds that react with a polyisocyanate to yield a solid polyurethane, and (b) a catalyst for vinyl-type polymerization, and a second liquid (II) consisting essentially of (a) a polyester-cement mixture of a polymerizable vinyl-type monomer such as styrene with a linear carboxyl-terminated unsaturated polyester having a molecular weight of at least 1,000, (b) polyisocyanates that react with the polyhydroxy compounds to yield the polyurethane, (c) a partly polymerized acrylic and/or a methacrylic ester of a low alkanol (up to hexanol), the proportions of the ingredients being such that upon mixing the two liquids the catalyst causes all the unsaturated II ingredients to polymerize and the polyisocyanates react to form a polyurethane with all of the polyhydroxy compounds, and the amount of polyurethane is from 0.5 to 3 times the weight of the compounds of the vinyl-type polymerizing system. Liquid (I) and liquid (II) are separately stable and can be stored for many months with or without a polymerization inhibitor present in liquid (II).

3,763,066

THERMAL STABILIZATION OF PIGMENTED POLYOLEFIN CONTAINING NICKEL COMPLEX

Joseph Anthony Stretanski, Clinton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 4, 1972, Ser. No. 250,260

Int. Cl. C08f *19/14*

U.S. Cl. 260—23 H **6 Claims**

Polyolefins containing (a) a nickel amine or nickel alkanolamine complex of 2,2'-thiobis(p-alkylphenol) to inhibit degradation by ultraviolet radiation and (b) a cadmium sulfide, cadmium selenide, or a cadmium sulfoselenide pigment can be stabilized against thermal discoloration by incorporation therein of a zinc salt of an alkanoic monocarboxylic acid of 8 to 20 carbon atoms, such as zinc stearate.

3,763,067

PRESSURE SENSITIVE ADHESIVE

Rudolf Hombach, Cologne-Flittard, and Dieter Thelsen, Remscheid, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 12, 1972, Ser. No. 243,415

Claims priority, application Germany, Apr. 14, 1971, P 21 18 020.1

Int. Cl. C09j *3/26*

U.S. Cl. 260—27 R **13 Claims**

Contact adhesives from polyalkenamers containing at least one polyalkenamer dissolved in an inert organic solvent, 10 to 250% by weight, based on the polyalkenamer, of a natural or synthetic resin, 0 to 5% by weight, based on the polyalkenamer, of an age resister and 0 to 100% by weight of a filler and/or pigment, based on the polymer.

3,763,068

RUBBERIZED COAL-TAR COMPOSITIONS

Paul W. Schuler, Jr., 1100 Mansion Ave., Collingswood, N.J. 08108

No Drawing. Continuation-in-part of abandoned application Ser. No. 858,099, Sept. 15, 1969. This application Mar. 6, 1972, Ser. No. 232,265

Int. Cl. C08f *45/04, 45/52*

U.S. Cl. 260—28.5 B **7 Claims**

Rubberized coal-tar compositions are provided which are comprised of a water emulsion of coal-tar, a neoprene and fly ash. The relative amounts of the ingredients present in the composition are selected so as to provide a material which, when applied to a surface and allowed to dry, will be non-tacky, non-tracking, flexible, resistant to wear, atmospheric oxidation, radiation degradation and insoluble in organic solvents. The compositions of the invention are especially useful as damp-proofing agents for underground structures, as coatings for driveways and the like, and particularly in water-proofing structures which may be subjected to radiation.

3,763,069

AQUEOUS DISPERSIONS OF CARBOXY-FUNCTIONAL SILICONES

Alvin E. Bey and James R. Heffel, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Original application Aug. 5, 1969, Ser. No. 847,742. Divided and this application Aug. 19, 1971, Ser. No. 173,263

Int. Cl. C08f *11/04*

U.S. Cl. 260—29.2 M **1 Claim**

A sizing agent for paper is disclosed which is a siloxane copolymer containing about 0.1 to 50 mole percent of carboxy-functional siloxane units. Paper sized with this siloxane has enhanced resistance to wetting. Sizing can be accomplished by either internal sizing processes (wet end) or surface sizing processes (dry end).

3,763,070

HYDRAULIC CEMENT WITH POLYISOCYANATE AND ALIPHATIC POLYEPOXIDE

Herbert Jackson Shearing, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 21, 1971, Ser. No. 145,896

Claims priority, application Great Britain, June 3, 1970, 26,839/70

Int. Cl. C04b *25/02*

U.S. Cl. 260—29.2 TN **4 Claims**

Cement compositions suitable for flooring applications which comprise a hydraulic cement, a silica filler, water, an organic polyisocyanate and a compound or mixture of compounds selected from monohydric alcohols, monocarboxylic acids having a molecular weight of at least 60 and certain compounds which contain on average at least one epoxy group per molecule. The presence of the alcohols, carboxylic acids or epoxy compounds delays the rate of setting of the compositions, thus giving a longer working time. Cyclic epoxy compounds give cured products having a very high compression strength.

3,763,071

DISPERSIBLE SUSPENSIONS OF FUNCTIONAL POLYMERS

Melvin F. Katzer, Danville, and Sewood Sewell, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 14, 1969, Ser. No. 816,076

Int. Cl. C08f *29/26, 33/04, 37/00*

U.S. Cl. 260—29.6 E **6 Claims**

Water-dispersible, functional polymers, such as linear or partially crosslinked homopolymers and copolymers of acrylamide or acrylic acid, are slurried in a water miscible non-solvent. Water or a liquid organic swelling agent is incorporated into the slurry to partially solvate and thereby swell the water dispersible solids. This reduces their bulk density thereby decreasing the tendency of the

polymer solids to settle out of suspension and at the same time improves their water-dispersibility. Such polymer suspensions are easily maintained or reformed by the application of mild agitation.

3,763,072

SOIL ADHESION COMPOSITION OF ACRYLIC LATEX AND SODIUM SILICATE

Irving B. Krieger, Studio City, Calif., assignor to Pacific Architects & Engineers Incorporated, Los Angeles, Calif.

No Drawing. Continuation-in-part of application Ser. No. 751,762, Aug. 12, 1968. This application Nov. 23, 1970, Ser. No. 92,263

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 S **8 Claims**

A method for forming a relatively thick semi-impervious crust on soil to inhibit erosion thereof comprising the steps of applying an aqueous composition to soil surface and allowing the composition to cure in the treated soil surface. The aqueous composition contains an aqueous 100% acrylic latex emulsion and sodium silicate.

3,763,073

ADHESIVE COMPOSITIONS

Gaylen M. Knutson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Apr. 20, 1971, Ser. No. 135,745

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 R **13 Claims**

A process for the production of an aqueous emulsion of an ethylene-vinyl acetate copolymer is disclosed wherein the polymerization is performed in the presence of a plasticizer comprising an ester of a monobasic acid and a glycol. The presence of the plasticizer during polymerization significantly improves the adhesion of films prepared from the polymer. The polymerization is performed under an ethylene pressure of from 100 to 1000 p.s.i.g., sufficient to incorporate from 1 to 20 weight percent ethylene in the final copolymer product and is carried out until the total free monomer content of the emulsion is reduced to below about 1 weight percent. Conventional free radical initiation of the polymerization reaction is used.

3,763,074

EMULSION FOR RUBBERIZING ASPHALT

Fritz S. Rostler, 1182 Miller Ave., Berkeley, Calif. 94708

No Drawing. Original application Mar. 20, 1968, Ser. No. 714,424, now Patent No. 3,577,250. Divided and this application Jan. 21, 1971, Ser. No. 108,596

Int. Cl. C08c *11/68;* **C08h** *13/06;* **C08j** *1/46*

U.S. Cl. 260—29.7 GP **14 Claims**

Method of incorporating an elastomer into asphalt by treating the asphalt pavement with an emulsion having an external water phase and an oil phase containing a dissolved elastomer, the oil preferably having an initial boiling point of not substantially less than 300° C. at 760 mm. Hg and a viscosity of above about 50 SUS at 210° F., the oil being mutually compatible with the asphalt and the elastomer.

3,763,075

IMIDE-AMIDE COPOLYMERS AND METHOD OF MAKING SAME

Friedrich Grundschober, Onex, and Joerg Sambeth, Carouge, Switzerland, assignors to Rhone-Poulenc-Textile, Lyon, France

No Drawing. Continuation-in-part of abandoned application Ser. No. 707,434, Feb. 2, 1968. This application Mar. 6, 1972, Ser. No. 232,263

Int. Cl. C08g *20/32*

U.S. Cl. 260—30.2 T **28 Claims**

Imide-amide copolymer in solution is prepared by causing a linear or cross-linked polyamide-imide in solution to react with a linear or cross-linked polyimide in solution, the proportion of both reactants being such that the copolymer contains from 10 to 90 percent of tetracarbonyl recurring units based on the total number of tricarbonyl and tetracarbonyl recurring units. This copolymer may be linear or cross-linked and, in both cases, is soluble in the form of high molecular weight macromolecules. From the solutions of this copolymer, films may be prepared, that are highly resistant to heat and exhibit a good flexibility.

3,763,076

VINYL CHLORIDE POLYMERS SUITABLE FOR USE IN COATING COMPOSITIONS

Roger Hogenmuller, Sainte-Foy-les-Lyon, Jacques Massebeuf, Serezin-du-Rhone, and Paul Medard, Oullins, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,367

Claims priority, application France, Dec. 8, 1970, 7044136

Int. Cl. C08f *15/40*

U.S. Cl. 260—31.2 R **17 Claims**

The invention provides a vinyl polymer which comprises

(a) about 60 to 90% by weight of units derived from vinyl chloride;

(b) about 2 to 25% by weight of units derived from a monoester of a diol containing 3 to 6 carbon atoms and a methacrylic acid or acrylic acid; and

(c) about 2 to 25% by weight of units derived from at least one vinyl ester of a saturated aliphatic monocarboxylic acid in which the carboxyl group is bonded to to a tertiary or quaternary carbon atom;

the polymer having a reduced viscosity of about 20 to 150 $cm.^3/g.$ (measured as an 0.5% by weight solution in cyclohexanone at 25° C.), which is useful in coating compositions which have good resistance to heat and chemical attack.

3,763,077

METHOD FOR THE ANIONIC POLYMERIZATION OF EPSILON-CAPROLACTAM IN THE PRESENCE OF A PLASTICIZER

Elio Eusebi, Troy, and Joseph B. Nowell, Highland Park, Mich., assignors to General Motors Corporation, Detroit, Mich.

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,754

Int. Cl. C08g *20/18, 20/38, 51/34*

U.S. Cl. 260—33.2 R **3 Claims**

Low temperature anionic polymerization of epsilon-caprolactam, using polymethylene polyphenyl isocyanate as cocatalyst, is conducted in the presence of certain polyoxyalkylene polyol plasticizers to form a plasticized, relatively high impact strength nylon-6.

3,763,078

WEAR RESISTANT GARMENTS AND METHOD AND COMPOSITION FOR PRODUCTION THEREOF

William E. Aldrich, Cranston, R.I., assignor to Warnaco Inc., Bridgeport, Conn.

No Drawing. Filed Nov. 30, 1970, Ser. No. 93,804

Int. Cl. C08c *11/28, 11/32*

U.S. Cl. 260—33.4 F **7 Claims**

Shirts having increased wear life are produced by a method comprising selectively treating the shirt collar and neck band with a composition comprising a non-aqueous solution of a polyurethane polymer or pre-polymer with a fluorocarbon oil repellant and soil release agent. The treated collar is pressed at elevated temperatures to cause the in situ polymerization of the composition thereby resulting in a permanent bond between the surface fibers of the shirt collar and the polymerized composition.

3,763,079

POLYURETHANES BASED ON MIXED AROMATIC-ALIPHATIC POLYESTERS

Michael Fryd, Philadelphia, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 102,920, Dec. 30, 1970. This application June 1, 1971, Ser. No. 149,007

Int. Cl. C08g *22/10, 51/04;* G11b *11/02*

U.S. Cl. 260—37 N 23 Claims

A polyester-urethane produced by

(A) admixing at least one linear copolyester, such copolyester

(1) produced by the reaction of one or more diols or polyether glycols with at least two different dicarboxylic acids, anhydrides of dicarboxylic acids, or methyl esters of dicarboxylic acids, about 40–80 mole percent of said dicarboxylic acids, anhydrides of dicarboxylic acids or methyl esters of dicarboxylic acids being aromatic and about 60–20 mole percent of said dicarboxylic acids, anhydrides of dicarboxylic acids or methyl esters of dicarboxylic acids being aliphatic

(2) having a hydroxyl number of about 20–225

(3) having a molecular weight of about 500 to about 10,000

(4) having about two hydroxyl groups per molecule with

(B) at least one organic diisocyanate, the molar ratio of isocyanate contained on the diisocyanate to hydroxyl contained on the copolyester being about 0.7/1.0 to about 1/1,

at a temperature and for a time sufficient to form a polyester-urethane.

3,763,080

PRESSURE MOLDED ARTICLES AND MOLDABLE COMPOSITION

Thomas F. Deuter, Jonesboro, Ark., assignor to General Electric Company

Filed Sept. 15, 1971, Ser. No. 180,770

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 EP 12 Claims

A composition of matter comprising a mixture of a matrix former, a mass of particulate material with the particles of particulate material being generally uniformly scattered throughout the mixture, and a separation inhibitor also generally uniformly scattered throughout the mixture. The composition can be moved through passages and orifices having a variety of configurations and into a mold cavity under pressure without relative separation between the particulate material and the remainder of the mixture. Also disclosed are articles that at least include a substantially rigid, nonporous structure pressure molded from such composition. These structures are a substantially rigid and solid agglomeration with the particulate material and separation inhibitor substantially uniformly scattered relative to solid matrix material. When the separation inhibitor is omitted from the mixture, and available pressure molding equipment and processes are utilized in an attempt to flow such material through a mold cavity orifice and form pressure molded structures therefrom, relative separation between the particulate material and matrix former material occurs. Such separation would result in loss of structural integrity of the molded part and result, e.g., in brittleness, loss of structural stability, graininess, measurable porosity, loose particles of particulate material, and the like. On the other hand, pressure molded articles embodying the invention appear to be uniform and have generally uniform properties and structural characteristics from one portion thereof to another. Exemplary methods of manufacturing compositions are also disclosed.

3,763,081

CURABLE ALIPHATICALLY UNSATURATED SILOXANE AND IMIDE BLENDS

Fred F. Holub and Abe Berger, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,594

Int. Cl. C08g *51/04;* C08k *1/02*

U.S. Cl. 260—37 SB 9 Claims

Resins are obtained from blends of aliphatically unsaturated siloxanes and imide containing compounds which have good resistance to mechanical deformation at elevated temperatures. These resins are particularly useful for making composite materials and molded articles.

3,763,082

NYLON PACKAGING FILM WITH THERMALLY DEVELOPABLE SLIP

Bentley W. Elliott, Milwaukee, Wis., assignor to Milprint, Inc., Milwaukee, Wis.

Filed May 31, 1972, Ser. No. 258,146

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 N 2 Claims

Flexible packaging film having a substantially amorphous nylon layer, consisting of either a single layer or monofilm of nylon or a multiple-layer film having a nylon exterior layer, in which the nylon contains an inert micron-sized material such as diatomaceous earth, glass beads, colloidal silica or finely divided asbestos. A nylon layer of this type provides a flexible packaging film having a latent slip characteristic which becomes functional after the film is heated to its thermoelastic state.

3,763,083

CONSTRUCTION MATERIALS

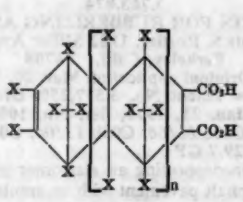
Morris P. Grotheer, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of abandoned application Ser. No. 750,959, Aug. 7, 1968. This application June 8, 1971, Ser. No. 150,926

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R 14 Claims

Unsaturated polyester resins derived from an unsaturated dicarboxllic acid, a lower alkylene neo-glycol and a component of the formula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3,763,084
POLY(DIACETONE ACRYLAMIDE) MODIFIED CALCIUM CARBONATE
Gabriel Michael Grudus, Jr., Randolph, and Stanley E. Gebura, Mountain Lakes, N.J., assignors to Interpace Corporation, Parsippany, N.J.
No Drawing. Filed Jan. 14, 1972, Ser. No. 217,977
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R 8 Claims

A process has been provided for polymerizing diacetone acrylamide monomer and a comonomer system based on diacetone acrylamide monomer onto a particulate calcium carbonate; this process may be carried out in an aqueous phase; the monomers or comonomers are polymerized via free radical polymerization onto the surface of calcium carbonate; when calcium carbonate is modified with diacetone acrylamide homopolymer, it possesses improved properties; by employing diacetone acrylamide as one of the monomer precursors in a comonomer system but by varying the amount of comonomer, modified calcium carbonate is obtained which possesses especially advantageous properties; products prepared by this process are within the scope of the invention as are the uses of these surface modified products for purposes as adjuvants in polymers, e.g. poly(ester), poly(vinyl chloride) and in oleaginous, alkyd, adhesive, paint, putty, caulking and grouting composition formulations, to name a few.

3,763,085
REFRACTORY COMPOSITION
Robert N. McFadgen, York, Pa., assignor to The J. E. Baker Company, York, Pa.
No Drawing. Continuation of abandoned application Ser. No. 813,710, Apr. 4, 1969. This application Aug. 23, 1971, Ser. No. 174,264
Int. Cl. C04b *35/66*; C08f *31/02, 33/02, 45/04*; C08h *13/08, 17/04*
U.S. Cl. 260—41 B 8 Claims

A pourable, non-hydratable, premixed, refractory ramming, patch or lining material for high temperature furnaces, ladles, and the like, consisting essentially of non-acid refractory aggregate such as particulate dolomite, magnesite, etc., mixed with about 2–5% of a water-resistant, normally liquid or plastic polymeric material, such as the lower molecular weight petroleum hydrocarbon resins, α-methyl styrene polymers, polybutenes and coumarone-indene resins.

3,763,086
COLORED ORGANIC POLYANHYDRIDE POLYMERS
Gregoire Kalopissis and Andre Viout, Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France
No Drawing. Continuation-in-part of application Ser. No. 576,811, Sept. 2, 1966, now Patent No. 3,597,468. This application Apr. 5, 1971, Ser. No. 131,457
Claims priority, application Luxembourg, Sept. 6, 1965, 49,441; Jan. 10, 1966, 50,228; June 14, 1966, 51,325; June 16, 1966, 51,345
Int. Cl. A11k *7/12*; A61k *7/12*
U.S. Cl. 260—41 C 13 Claims

A colored polymer comprises an organic acid polyanhydride having condensed on the anhydride functions thereof an amine dye and a lower alkanol.

3,763,087
IMIDE CONTAINING BLENDS AND POLYMERIC COMPOSITIONS PREPARED THEREFROM
Fred F. Holub, Schenectady, N.Y., and John T. Hoback, Easton, Pa., assignors to General Electric Company
No Drawing. Filed Nov. 19, 1971, Ser. No. 200,590
Int. Cl. C08f *15/00, 45/04*
U.S. Cl. 260—41 R 8 Claims

Resins are obtained, which have good resistance to mechanical deformation at elevated temperatures and good adhesion to inorganic materials such as metals and ceramics, from blends of epoxide and imide containing or derived compounds. These resins are particularly useful for making composite materials and molded articles.

3,763,088
GLASS FIBER REINFORCED THERMOPLASTIC RESINOUS COMPOSITION
Shinichi Izawa, Tokyo, and Kunio Toyama, Kanagawa, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan
No Drawing. Filed Dec. 14, 1971, Ser. No. 207,949
Claims priority, application Japan, Dec. 28, 1970, 46/120,515
Int. Cl. C08d *9/10*
U.S. Cl. 260—41.5 A 13 Claims

A novel glass fiber reinforced thermoplastic resinous composition is prepared by adding glass fibers to a resinous composition made of 99.5 to 55 wt. percent noncrystalline thermoplastic resins such as styrene type resins, polyphenylene ether resins, aromatic polycarbonate resins, aromatic polysulphone resins and the like, and 0.5 to 45 wt. percent uncured epoxy resins, in an amount of 5 to 50 percent by weight based on the total weight of said resinous composition. This glass fiber reinforced thermoplastic resinous composition, having improved impact strength as well excellent molding processability, is suitable for making a large scale shaped article or a shaped article having a complicated structure.

3,763,089
STABILIZER SYSTEM FOR STEREOREGULAR RUBBERS
Robert W. Layer, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
No Drawing. Filed Sept. 30, 1970, Ser. No. 77,050
Int. Cl. C08c *11/44, 11/52*
U.S. Cl. 260—45.8 N 10 Claims

Stereoregular rubbers are effectively stabilized against oxidative and thermal degradation by the addition of small amounts of a thioamido compound and an amine compound. The combination of thioamido ad amine compounds behave synergistically.

3,763,090
FLAME RETARDANT COMPOSITIONS OF MATTER
Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 757,777, Sept. 5, 1968. This application Feb. 1, 1971, Ser. No. 111,633
Int. Cl. C09k *3/28*
U.S. Cl. 260—45.8 N 9 Claims

Novel compositions of matter comprising a polymeric compound and the reaction product resulting from the reaction between a halo-substituted polyhydropolycyclicdicarboxylic acid or anhydride thereof and an s-triazine possess desirable physical properties such as being flameproof or fire resistant.

3,763,091
DIKETOPIPERAZINE RING CONTAINING COMPOUNDS AND PROCESS FOR PREPARING SAME
Vittorio Crescenzi, Antonio Ciana, Elio Russo, Vincenzo Giancotti, and Luciano Salvestrini, Trieste, Italy, assignors to Snam Progetti, S.p.A., Milan, Italy
No Drawing. Filed Apr. 2, 1971, Ser. No. 130,787
Claims priority, application Italy, Apr. 2, 1970, 22,803/70
Int. Cl. C08g *33/02*
U.S. Cl. 260—47 CZ 3 Claims

This invention relates to novel polymers which are prepared from a diketopiperazine with a bifunctional compound or with a monofunctional unsaturated compound.

3,763,092

POLYMER STABILIZATION WITH NICKEL DERIVATIVES OF β-DITHIONES

Ronald D. Mathis, Taylors, S.C., and Jack P. Guillory, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Dec. 14, 1971, Ser. No. 207,971

Int. Cl. C08f 45/62

U.S. Cl. 260—45.75 N 8 Claims

Stabilizers comprising nickel derivatives of β-dithiones (thiodiketones) are incorporated into polyolefins to stabilize the polymers against ultraviolet light deterioration.

3,763,093

ALKYLHYDROXYPHENYLCARBOALKOXY-SUBSTITUTED NITROGEN HETEROCYCLES AS STABILIZERS AGAINST OXIDATIVE, THERMAL AND PHOTOCHEMICAL DEGRADATION OF ORGANIC MATERIALS

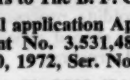
George Kletecka, Lakewood, and Peter D. Smith, Cleveland, Ohio, assignors to The B. F. Goodrich Company

No Drawing. Original application Apr. 27, 1970, Ser. No. 32,435, now Patent No. 3,531,483. Divided and this application Feb. 10, 1972, Ser. No. 225,341

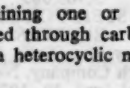
Int. Cl. C08f 45/60

U.S. Cl. 260—45.8 N 17 Claims

Compounds containing one or more alkylhydroxyphenyl groups bonded through carboalkoxy linkages to a nitrogen atom of a heterocyclic nucleus containing an imidodicarbonyl



group or an imidodithiocarbonyl



group have been prepared and are extremely effective stabilizers against the deleterious effects of oxygen, heat and light for organic materials. The stability of polymeric compositions such as α-olefin polymers and copolymers, acetal polymers, polyamides, polyesters and polyurethanes is markedly increased by the addition of small amounts of the present compounds thereto.

3,763,094

COMPOSITIONS STABILIZED WITH TRIS(HYDROXYALKYLPHENYL) DERIVATIVES OF THIOPROPIONYL HEXAHYDROTRIAZINES

Martin Knell, Ossining, and David H. Steinberg, Bronx, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application June 1, 1971, Ser. No. 149,048, now Patent No. 3,694,440. Divided and this application June 15, 1972, Ser. No. 263,338

Int. Cl. C08f 45/58

U.S. Cl. 260—45.8 N 7 Claims

Organic materials normally subject to oxidative and/or thermal degradation, for example, synthetic polymers such as polyolefins, mineral and synthetic lubricating oils and the like, are stabilized against degradation by incorporating in such compositions tris(alkylhydroxyphenyl) derivatives of thiopropionyl hexahydrotriazines. An example of such comopsitions is polypropylene stabilized with 1,3,5 - tris(4' - hydroxy-3',5'-di-tert-butylphenylpropionyloxyethylthiopropionyl)-hexahydro-1,3,5-triazine.

3,763,095

CHEMICALLY CROSS LINKED POLYETHYLENE STABILIZED WITH BIS(DIMETHYLPHENOL) SULFIDES

Anthony Di Battista, Eastchester, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,603

Int. Cl. C08f 45/58

U.S. Cl. 260—45.85 H 10 Claims

Cross-linked polyethylene, especially those cross-linked with peroxides, can be successfully stabilized without interfering with the cross-linking, by incorporating therein bis(3,5-dimethyl-4-hydroxyphenyl)sulfides. Other additives, such as synergists, metal deactivators, pigments, carbon black and the like may also be present. Chemically cross-linked polyethylene is particularly useful as an insulation for high voltage power cables.

3,763,096

CHLORINE-CONTAINING, THERMOSTABILIZED POLYMERS

Egon Norbert Petersen, Neunkirchen-Seelscheid, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

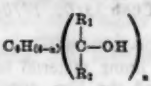
No Drawing. Filed Jan. 20, 1972, Ser. No. 219,499

Claims priority, application Germany, Jan. 27, 1971, P 21 03 678.2

Int. Cl. C08f 45/58

U.S. Cl. 260—45.95 L 10 Claims

Thermostabilized chlorine-containing polymer containing as a thermostabilizing agent in an amount effective to improve the thermostability thereof, a polyhydroxyalkyl substituted benzene of the formula



wherein R_1 and R_2 represent hydrogen or lower alkyl and n is 2 to 6.

3,763,097

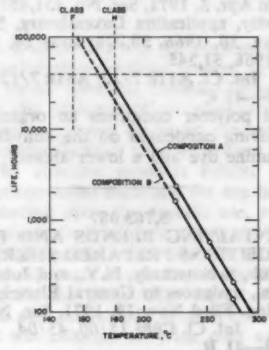
POLYETHER RESINS PREPARED FROM A DIEPOXIDE AND A TRIS(2-HYDROXYETHYL) ISOCYANURATE

Leonard E. Edelman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 16, 1971, Ser. No. 199,151

Int. Cl. C08g 30/04

U.S. Cl. 260—47 EP 17 Claims



Polyether resins are made by reacting a cyclic diepoxide with a tris(2-hydroxyethyl) isocyanurate at an

acid pH. The acid pH is preferably obtained by the use of a mild acid such as butyl acid phosphate. The reaction is complete after about 1½ to 10 hours at about 160 to 220° C.

3,763,098

LOW TEMPERATURE EPOXY CURING ACCELERATORS AND SYSTEM

Harold A. Green, Havertown, and Robert G. Petrella, Philadelphia, Pa., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

No Drawing. Original application Apr. 18, 1969, Ser. No. 818,470, now Patent No. 3,642,649. Divided and this application Feb. 3, 1971, Ser. No. 112,447

Int. Cl. C08f *45/72;* **C08g** *51/84*

U.S. Cl. 260—47 EN **7 Claims**

Low temperature epoxy curing accelerators are prepared from tertiary amine salts of hydrobromic acid, paratoluene sulfonic acid, 2-ethylhexoic acid or thiocyanic acid, wherein the tertiary amine is either triethylene diamine, methyl triethylene diamine or 2-ethyl-4-methyl imidazole.

3,763,099

PROCESS FOR PREPARING POLYCARBONATE USING A GUANIDINE CATALYST

Donald B. G. Jaquiss, New Harmony, Ind., assignor to General Electric Company

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,507

Int. Cl. C08g *17/13*

U.S. Cl. 260—47 XA **5 Claims**

An improved process for preparing an aromatic carbonate polymer by carrying out the reaction in the presence of a particular catalyst. The particular catalyst employed herein can be either a guanidine or a substituted guanidine and is present during the reaction in an amount of 0.1–10.0 mole percent.

3,763,100

COATING COMPOSITIONS FROM SOLID EPOXY RESINS AND ADDUCTS OF AZIRIDINE COMPOUNDS WITH POLYEPOXIDES

Patrick Henry Martin and Wesley Joseph Stearns, Jr., Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 9, 1971, Ser. No. 206,527

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN **4 Claims**

Coating compositions are disclosed which contain

(A) an epoxy-bisphenol adduct having low percent epoxide,

(B) an adduct of an aziridine compound with a polyepoxide, and

(C) optionally a mono-functional secondary amine.

These coatings are particularly useful as primers for metallic substrates.

3,763,101

THERMOSETTING ALICYCLIC ENDO END CAPPED RESINS

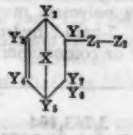
Robert J. Jones, Hermosa Beach, and Eugene A. Burns, Palos Verdes Peninsula, Calif., assignors to TRW Inc., Redondo Beach, Calif.

No Drawing. Filed Apr. 3, 1972, Ser. No. 240,798

Int. Cl. C08g *23/20, 25/00*

U.S. Cl. 260—47 CP **7 Claims**

Resins having good thermal and chemical stability are made by curing chemically stable alicyclic endo end capped compounds having oxy or sulfone substituents. The prepolymers are made by reacting proper stoichiometric amounts of an aromatic sulfone or an aromatic ether containing at least two functional substituents wherein the aromatic ring generally functions as both the electron donor or acceptor, depending upon the nature of the substituent used to form the linkage, and end capping with an alicyclic endo compound having the formula



wherein Y_1–Y_7, inclusive, can be hydrogen, halogen, nitro, aryl, alkyl, alkyl ether, or alkyaryl; X can be carbonyl, oxygen, sulfur, methylene, halogen substituted methylene, alkyl substituted methylene, or aryl substituted methylene; Z_1 can be an arylene radical or an alkylene group having 0 to 4 carbon atoms; and Z_2 can be a halide or a hydroxyl group. The end capping compounds are synthesized by reacting a cyclodiolefin with an olefinic compound according to a Diels-Alder reaction.

3,763,102

PRODUCTION OF MOLDINGS AND COATINGS BY THE REACTION OF A POLYEPOXIDE AND A POLYAMINE

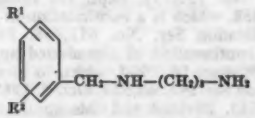
Herwig Hoffmann, Frankenthal, Oskar Lissner, Bad Duerkheim, Karl Merkel, Ludwigshafen, and Heinrich Scholz, Heidelberg, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed May 3, 1972, Ser. No. 249,766

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN **5 Claims**

Production of moldings or coatings by reaction of a polyepoxide compound with a polyamine of the general formula:



in which R^1 and R^2 may be identical or different and are hydrogen, alkyl of one to eight carbon atoms, or cycloalkyl or aryl of up to twelve carbon atoms, in the presence or absence of conventional additives.

3,763,103

AROMATIC POLYMERS OF 7-HALO-2-HYDROXY-10,10-DIOXOPHENOXATHIINS

Alan Branford Newton, London, and John Brewster Rose, Letchworth, England, assignors to Imperial Chemical Industries Limited, London, England

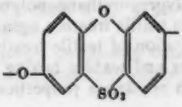
No Drawing. Continuation-in-part of application Ser. No. 56,666, July 20, 1970. This application Jan. 31, 1972, Ser. No. 222,323

Claims priority, application Great Britain, July 31, 1969, 38,439/69

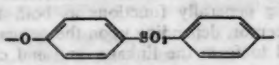
Int. Cl. C08j *23/00*

U.S. Cl. 260—49 **4 Claims**

New aromatic polymer comprising units of the formula



and copolymers comprising such units and other units such as



are of higher softening point than polymers of the latter units alone. The new polymers may be made using an alkali metal salt of 7-halo-2-hydroxy-10,10-dioxophenoxathiin as monomer or comonomer.

3,763,104

PRODUCTION OF PARA-SUBSTITUTED PHENOL/FORMALDEHYDE RESINS USING HETEROGENEOUS MULTI-PHASE REACTION MEDIUM

Alan David Buchanan, Rosanna, Victoria, Australia, assignor to Monsanto Australia Limited, Melbourne, Victoria, Australia

No Drawing. Original application Feb. 26, 1970, Ser. No. 14,664. Divided and this application May 19, 1972, Ser. No. 254,854

Int. Cl. C08g *5/08*

U.S. Cl. 260—53 R **9 Claims**

Process for the production of alkyl or aryl p-substituted phenol/formaldehyde resins in which a phenolic component such as an alkyl p-substituted phenol or an aryl p-substituted phenol is first reacted with formaldehyde in the presence of an inorganic alkaline catalyst in a heterogeneous multi-phase reaction medium after which the reaction product is etherified to produce the desired resin product.

3,763,105

SHAPED STRUCTURE OF TRIOXANE AND POLYACETALDEHYDE

Saunders E. Jamison, Summit, N.J., assignor to Celanese Corporation of America, New York, N.Y.

No Drawing. Application Mar. 10, 1971, Ser. No. 123,016, now Patent No. 3,231,543, which is a division of application Ser. No. 759,791, Sept. 13, 1968, now Patent No. 3,600,458, which is a continuation-in-part of abandoned application Ser. No. 611,468, Jan. 24, 1967, which is a continuation of abandoned application Ser. No. 364,349, Apr. 10, 1964, which in turn is a division of application Ser. No. 62,534, Oct. 4, 1960, now Patent No. 3,231,543. Divided and this application Mar. 17, 1972, Ser. No. 235,842

Int. Cl. C08f *37/02, 37/04*

U.S. Cl. 260—67 R **2 Claims**

This application discloses a process of preparing a self-supporting shaped structure which comprises polymerizing a solid phase monomer in the presence of a fluid catalyst. Specifically, trioxane is mixed with a resinous binder and then polymerized in the presence of boron fluoride. Also disclosed is the copolymerization of trioxane with diepoxides.

3,763,106

POLYMERS PREPARED BY REACTING UREA WITH AN AMINO ALCOHOL OR DIAMINE FOLLOWED BY METHYLOLATION WITH FORMALDEHYDE

Kenneth H. Markiewitz, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,892

Int. Cl. C08g *9/10, 9/18*

U.S. Cl. 260—69 R **9 Claims**

Substituted ureas, polyurethane polymers, polyurea polymers, and polyureaurethane polymers are disclosed which are useful as textile treating agents or as intermediates for the preparation of textile treating agents. Process for treating textiles and textiles having improved durable press and abrasion resistance properties are disclosed.

3,763,107

POLYBENZIMIDAZOLES AND METHOD OF PREPARATION

Gaetano Francis D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

No Drawing. Filed Nov. 10, 1970, Ser. No. 88,475

Int. Cl. C08g *9/06*

U.S. Cl. 260—72.5 **26 Claims**

This invention deals with a novel, relatively simple process of preparing polybenzimidazoles, containing the repeating units of the structure

which comprises condensing tetraamino compounds,

in solution, with dialdehydes, $Z(CHO)_2$, while oxygen or other oxygen-containing gases are passed through the solution, wherein

Ar represents a tetravalent aromatic moiety in which $-NH_2$ and —NHR are disposed ortho to each other,

Z represents a divalent organic moiety as the residue of a dialdehyde, $Z(CHO)_2$,

Q represents R and $-H_2CZCH_2-$, and in which

R represents hydrogen and a monovalent hydrocarbon moiety containing one to twelve carbon atoms.

New types of polybenzimidazoles, including crosslinkable, crosslinked, telomerized polymers and copolymers, as well as the known polybenzimidazoles, have been prepared by this new process.

3,763,108

POLYMERIZABLE PHOSPHORUS-CONTAINING MONOMERS PREPARED BY REACTING AN ALDEHYDE, AN UNSATURATED AMIDE AND TRIALKYL PHOSPHITES

Wen-Hsuan Chang and Rostyslaw Dowbenko, Gibsonia, Pa., and Carl C. Anderson, Menomonee Falls, Wis., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 29,309, Apr. 16, 1970. This application Apr. 27, 1972, Ser. No. 248,294

Int. Cl. C07f *9/02;* **C08g** *9/32*

U.S. Cl. 260—72 R **8 Claims**

Phosphorus-containing monomers are prepared by reacting unsaturated amides with aldehydes and trialkyl phosphites. The resulting monomers can be polymerized to form a fire-retardant resin which may be used as a pressure-sensitive adhesive.

3,763,109

SEGMENTED THERMOPLASTIC COPOLYESTERS

William K. Witsiepe, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,230

Int. Cl. C08g *17/08*

U.S. Cl. 260—75 R **16 Claims**

Segmented thermoplastic copolyesters containing recurring long chain ester units derived from dicarboxylic acids and long chain glycols and short chain ester units derived from dicarboxylic acids and low molecular weight diols. At least 70% of the dicarboxylic acid used is terephthalic acid and at least 70% of the low molecular weight diol is 1,4-butanediol. The short chain ester units constitute

about 66–95% by weight of the polymer. Such copolyesters rapidly harden from the molten state and have outstanding physical properties over a broad temperature range and good resistance to solvents and to heat aging.

3,763,110

ADHESIVES CONTAINING DIPHENYLMETHANE TETRAISOCYANATE DERIVATIVES

Günter Oertel, Cologne-Flittard, Hans Holtschmidt, Leverkusen-Steinbuechel, Manfred Dollhausen, Hitdorf, and Eugen Bock, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Nov. 24, 1969, Ser. No. 879,524, now Patent No. 3,707,486. Divided and this application Sept. 1, 1972, Ser. No. 285,710

Claims priority, application Germany, Dec. 4, 1968, P 18 12 565.0

Int. Cl. C08g *41/00;* C09j *3/12, 3/14*

U.S. Cl. 260—77.5 AP 7 Claims

Compositions useful as adhesives having improved bonding characteristics are prepared from natural or synthetic rubber binders and a diphenylmethane tetraisocyanate derivative.

3,763,111

POLYURETHANE PRODUCTS PRODUCED FROM A SUCROSE-ETHYLENE DIAMINE CO-INITIATED POLYETHER POLYOL

Walter R. Fijal, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Application May 7, 1969, Ser. No. 822,702, now Patent No. 3,640,997, which is a continuation-in-part of abandoned application Ser. No. 605,178, Dec. 28, 1966. Divided and this application May 6, 1971, Ser. No. 140,960

The portion of the term of the patent subsequent to Oct. 7, 1986, has been disclaimed

Int. Cl. C08g *22/14, 22/44*

U.S. Cl. 260—77.5 AQ 5 Claims

A sucrose-ethylene diamine polyol is prepared by reacting a mixture of sucrose and ethylene diamine with an alkylene oxide in the presence of a caustic catalyst. The polyol is used to prepare polyurethane foam products having excellent dimensional stability and physical properties. The polyurethane foams are used in preparing molded articles and as insulation for refrigerators, freezers, and the like.

3,763,112

ADDITION REACTION INVOLVING DIPEROXYFUMARATE AND COMPOUNDS HAVING DIPEROXYSUCCINYL GROUPS

Richard Anthony Bafford, Tonawanda, Ernest Rudolph Kamens, Buffalo, and Orville Leonard Mageli, Kenmore, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Original application Mar. 8, 1968, Ser. No. 711,502, now Patent No. 3,592,948. Divided and this application Apr. 2, 1971, Ser. No. 130,855

Int. Cl. C07c *69/00;* C08f *1/60, 27/00*

U.S. Cl. 260—78.4 D 14 Claims

A diester of diperoxyfumaric acid is reacted at its double bond with an organic compound R—$(X)_a$ where "X" is a monovalent atom readily abstractable by a free radical, e.g., hydrogen, chlorine or bromine, and R is inert to the peroxycarbonyl groups of the diperoxyfumarate to form an addition product including at least one diester of a substituted diperoxysuccinic acid. For example: Tetrahydrofuran and di-t-butyl diperoxyfumarate react at about 0° C. to form di-t-butyl alpha-(2-tetrahydrofuryl)diperoxysuccinate. Polyglycols and polyvinyl ethers, alcohols, halides, etc. react to give polymers having pendant pairs of peroxycarbonyl ester groups in gamma relationship to each other.

These compounds are of especial interest in the preparation of block and graft copolymers.

3,763,113

POLYAMIDES

Harold George Burrows and Stephen John Hepworth, both of Hexagon House, Blackley, Manchester, England

No Drawing. Filed June 15, 1966, Ser. No. 557,639

Claims priority, application Great Britain, June 23, 1965, 26,596/65

Int. Cl. C08g *20/40*

U.S. Cl. 260—78 SC 5 Claims

A method for increasing the molecular weight of a polyamide and the composition produced thereby, comprising heating a polyamide in the presence of a phosphonic acid material at an elevated temperature for a period of time sufficient to increase the relative viscosity of the polyamide. The process is particularly useful for finishing polyamide fiber-forming and molding compositions to a high relative viscosity while avoiding undesirable degradation of the polymer.

3,763,114

PREPARATION OF A THERMOSETTABLE POLYIMIDE

Gerald Michael Saluti, Norwalk, and Roland Ralph Dileone, Rowayton, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed July 22, 1971, Ser. No. 165,385

Int. Cl. C08g *20/00, 20/32*

U.S. Cl. 260—78.4 R 10 Claims

This invention relates to rapid-curing, stable, moldable polyimides. More particularly, it relates to rapid-curing, stable, moldable, fully imidized polyimides formed from a suitable dianhydride, methylenedianiline and maleic anhydride. Still more particularly, the invention is concerned with rapid-curing, stable, moldable, fully imidized polyimides formed from a suitable dianhydride, methylenedianiline, and maleic anhydride in the presence of a dimethylformamide imidizing mixture.

3,763,115

PREPARATION OF CURABLE POLYMERIC TRIAZINE COMPOSITIONS

Gordon H. Miller, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Sept. 1, 1971, Ser. No. 177,170

Int. Cl. C07d *55/00;* C08f *3/80*

U.S. Cl. 260—78.4 N 16 Claims

Aliphatic nitriles having at least two —CN groups are polymerized by heating to a temperature of from about 80 to about 450° C. in the presence of a catalyst, such as a metal chloride, to form curable polymeric compositions which under the influence of heat and pressure can be converted to high strength, thermally stable, insoluble, infusible, polymeric materials.

3,763,116

PERFLUOROALKYL-THIOETHER ALCOHOLS, ESTERS AND POLYMERS

Edward Karl Kleiner, New York, and Martin Knellde-clare, Ossining, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 199,793, Nov. 17, 1971, which is a continuation-in-part of application Ser. No. 720,370, Apr. 10, 1968. This application Oct. 20, 1972, Ser. No. 299,487

Int. Cl. C08f *3/62, 3/64, 3/70*

U.S. Cl. 260—78.4 E 27 Claims

Perfluoroalkyl group containing thioether alcohols are converted into α,β-unsaturated mono-, di- and triesters

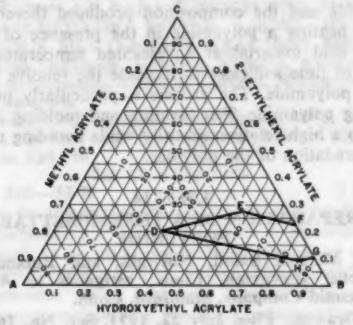
from which polymers are derived having soil repellent properties particularly if applied to substrates such as textiles, paper and leather.

3,763,117

AQUEOUS ALKALI REMOVABLE PRESSURE SENSITIVE ADHESIVES

Lawrence M. McKenna, Jr., Wilbraham, and Donald M. Gardner, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 21, 1971, Ser. No. 182,351
Int. Cl. C08f 15/40; C09j 7/02
U.S. Cl. 260—78.5 E 7 Claims



Disclosed herein are acrylate based pressure sensitive adhesives which are characterized by having good adhesive properties and water resistance at room temperature but which are easily removed or dispersed by hot aqueous alkaline solutions.

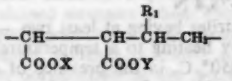
3,763,118

NOVEL COMPOSITIONS

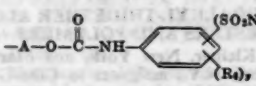
Henri Ulrich, Northford, and Fred A. Stuber, North Haven, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Apr. 24, 1972, Ser. No. 246,855
Int. Cl. C08f 27/06, 27/08, 27/12
U.S. Cl. 260—78.5 T 5 Claims

Radiation (thermal and light)-sensitive polymers are provided characterized by the presence, in combination in the same molecule, of each of two recurring units, each unit corresponding to the formula:



where R_1=lower-alkoxy or phenyl. In the case of one of the two units, one of X and Y represents hydrogen and the other represents dialkylaminohydrocarbyl; in the case of the second unit, one of X and Y represents hydrogen and the other represents:



where A=alkylene from 2 to 10 carbon atoms having from 2 to 6 carbon atoms between valencies, R_4=lower-alkyl or halogen, x=1 or 2, y=0 to 2 and $x+y$=1 to 3. Water soluble salts are also disclosed. The above polymers are useful for chemically bonding acid or basic dyestuffs to non-dye receptive substrates (e.g. polyethylene) by coating the substrate with the above polymer and exposing the coated substrate to irradiation. The treated substrate is then contacted with an acid, direct, or basic dyestuff. The irradiation can be carried out imagewise, and the image developed by removing the unexposed polymer prior to application of the dye. Bonding of the radiation-sensitive polymers of the invention to substrates in the above manner can also be employed as a means of rendering hydrophilic a variety of substrates which are normally hydrophobic.

3,763,119

ACRYLIC ESTER VINYLBENZYL CHLORIDE ELASTOMERS

Robert D. De Marco, Avon Lake, and Harold A. Tucker, Shaker Heights, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Feb. 16, 1972, Ser. No. 226,973
Int. Cl. C08f 15/26, 15/40
U.S. Cl. 260—80.76 9 Claims

Acrylic ester elastomers of improved processing safety are prepared by polymerizing together a major amount of an acrylic ester monomer and a minor amount of vinyl benzyl chloride monomer and optionally a minor amount of a copolymerizable vinyl monomer containing a terminal vinylidene group. When admixed with vulcanizing agents, the elastomers exhibit increased scorch time without a comparable increase in cure time.

3,763,120

COPOLYMERS OF ALKYL STYRENES AND N-VINYL HETEROCYCLIC MONOMERS AND INVERSE SUSPENSION POLYMERIZATION USING THE SAME

Bobby Leroy Atkins, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Mar. 12, 1970, Ser. No. 19,128. Divided and this application Oct. 13, 1971, Ser. No. 189,025
Int. Cl. C08f 3/44, 3/90, 15/00
U.S. Cl. 260—80 M 7 Claims

This invention relates to a new interpolymeric composition of matter and particularly to copolymers of certain alkyl substituted alkenyl aromatic monomers and N-vinyl heterocyclic monomers. The new copolymers find utility as suspending agents for water-in-oil dispersions and as water dispersible coatings.

3,763,121

TRANSPARENT AND THERMOPLASTIC COPOLYMERS OF ACRYLONITRILE

Karl-Erwin Schnalke, Cologne, Ibrahim Abdel Aziz El Sayed, Schildgen, and Carlhans Süling, Odenthal-Hannenberg, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 19, 1972, Ser. No. 245,641
Claims priority, application Germany, Apr. 21, 1971, P 21 19 213.2
Int. Cl. C08f 15/40
U.S. Cl. 260—80.81 2 Claims

Terpolymers having an overall composition representing a monomer content of 50–75% by weight of acrylonitrile, 23 to 48% by weight of vinyl acetate and 2 to 20% by weight of pyropylene, the monomers being substantially statistically distributed are obtained by polymerisation in an aqueous emulsion. The terpolymers can be processed into fibres, filaments and extruded mouldings.

3,763,122

ACRYLAMIDE-STYRENE PHOSPHONIC ACID COPOLYMERS AS PAPER ADDITIVES

Gunther Elfers, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed Mar. 7, 1972, Ser. No. 232,528
Int. Cl. C08f 15/02
U.S. Cl. 260—80.3 N 3 Claims

Copolymers prepared from acrylamide and styrene or alkyl styrene phosphonic acid, said copolymers having a

molecular weight of at least about 100,000 are useful for improving the burst strength of paper.

3,763,123

VINYL HALIDE INTERPOLYMERS

Jacques Abraham Waterman, Leonard Marshall Shorr, and Ilan Shaham, Haifa, Israel, assignors to Israel Mining Industries-Institute for Research and Development, Haifa, Israel

No Drawing. Continuation-in-part of abandoned application Ser. No. 808,652, Mar. 19, 1969. This application Dec. 29, 1970, Ser. No. 102,560

Claims priority, application Israel, Apr. 14, 1968, 29,817

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.7 **6 Claims**

New solid addition copolymers with an extended branched chain structure comprise from 20 to 98% by weight of polymerized vinyl chloride and/or vinyl fluoride, at least one polymerized compound of the group of allyl halides, allylic hydrocarbons and alkyl substituted allylic hydrocarbons, and from 100 p.p.m. to 5% by weight of at least one polymerized compound characterized in its non-polymerized monomeric form by a carbon-carbon double bond which is asymmetrically substituted and conjugated with another double bond and by having a reactivity ratio r_2 relative to said vinyl chloride or vinyl fluoride larger than 3 and a reactivity ratio r_1 relative to said vinyl chloride or vinyl fluoride smaller than 0.5.

3,763,124

TREATMENT OF THE ALKALI METAL SULFIDE REACTANT TO REDUCE IMPURITIES AND ITS REACTION WITH A POLYHALO-SUBSTITUTED AROMATIC COMPOUND

James T. Edmonds, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed June 21, 1971, Ser. No. 155,258

Int. Cl. C08g *23/00*

U.S. Cl. 260—79.1 **11 Claims**

An improved method of preparing arylene sulfide polymers results from treatment of the alkali metal sulfide reactants prior to reaction with polyhalo-substituted aromatic compounds. The method is one which comprises the steps of: (1) contacting an alkali metal sulfide reactant comprising an alkali metal sulfide and an impurity selected from the class consisting of alkali metal hydrosulfide, alkali metal thiosulfate, and mixtures thereof, with an alkali metal hydroxide; and (2) subsequently reacting the thus contacted alkali metal sulfide reactant with a polyhalo-substituted aromatic compound to form an improved arylene sulfide polymer.

3,763,125

POLYMERISATION PROCESSES USING IMPROVED FRIEDEL-CRAFTS CATALYSTS

Anthony Gifford Moody and Ian Stanley Ripley, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,313

Claims priority, application Great Britain, Feb. 22, 1971, 5,097/71

Int. Cl. C08f *15/01, 15/02*

U.S. Cl. 260—81 **9 Claims**

In a Friedel-Crafts catalysed polymerisation in which, for example, aluminium chloride is used to catalyse the polymerisation of an unsaturated petroleum fraction to produce a petroleum resin, the improved catalyst complex comprises aluminium chloride/hydrogen chloride and a benzene substituted by at least one secondary or tertiary alkyl group, e.g. cumene or p-cymene, or cycloalkyl group.

3,763,126

RANDOM COPOLYMERIZATION OF CONJUGATED DIENES WITH MONOVINYL AROMATIC MONOMERS

Ralph C. Farrar, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,401

Int. Cl. C08f *1/28, 19/08*

U.S. Cl. 260—83.7 **15 Claims**

Multilithium polymerization initiators useful in systems containing organoalkali metal alkoxide randomizing agents are prepared with very low ratios of unsaturated reactant:lithium in order to avoid gel formation when subsequently prepared polymers are coupled or terminated with a branching agent.

3,763,127

HALOGEN CONTAINING ESTERS OF VINYL ARLENE ACETIC ACID AND POLYMERS THEREOF

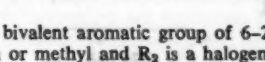
Richard J. Dolinski, Jerry D. De Vrieze, and Robert M. Nowak, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application June 15, 1970, Ser. No. 46,499, now Patent No. 3,649,668. Divided and this application Oct. 4, 1971, Ser. No. 186,445

Int. Cl. C08f *3/50, 3/64, 15/16*

U.S. Cl. 260—86.7 **5 Claims**

Polymerizable, halogen containing esters of the following formula are disclosed



where Ar is a bivalent aromatic group of 6–20 carbons, R_1 is hydrogen or methyl and R_2 is a halogenated group derived from a primary alkyl alcohol having from 5 to about 10 carbons wherein the carbon adjacent to a carbon bearing a halogen has no hydrogens, a halogenated phenyl group or a halogenated allyl group.

3,763,128

NOVEL CO-INITIATOR SYSTEMS

Roger N. Lewis, Pinole, and Ronald L. Friedman, San Rafael, Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Original application Apr. 8, 1970, Ser. No. 26,768, now Patent No. 3,687,867. Divided and this application Apr. 19, 1972, Ser. No. 245,285

Int. Cl. C08f *3/04, 3/30, 3/68*

U.S. Cl. 260—89.1 **1 Claim**

The combination of tertiary alkyl peresters of tertiary hydroperoxides and either organic azo compounds containing the monovalent —CN radical or diacyl peroxides useful as polymerization initiators. These co-initiator systems are particularly efficient in the polymerization of certain vinyl monomers such as vinyl chloride.

3,763,129

POLYAZO SEQUENTIAL FREE RADICAL INITIATORS

Chester Stephen Sheppard, Tonawanda, and Ronald Edward MacLeay, Williamsville, N.Y., assignors to Pennwalt Corporation

No Drawing. Original application Aug. 15, 1968, Ser. No. 752,752. Divided and this application Feb. 22, 1972, Ser. No. 228,263

Int. Cl. C08f *3/68, 7/04*

U.S. Cl. 260—89.5 A **4 Claims**

Polyazo compounds having at least one azo function different from the other azo function(s).

Examples:

4-ethoxycarbonylazo-4-cyanopentyl 4-t-butylazo-4-cyanovalerate;

2,2' - azobis[2-(4-t-butylazo-4-cyanovaleroyloxy)-4-methylpentane].

Organic syntheses requiring free radical generation in two stages are carried out using as the source of sequential free radicals a polyazo compound, as defined, wherein at least one azo function is ruptured in the first stage and the remaining azo function(s) are ruptured in the second stage.

Example: Styrene monomer and 4-ethoxycarbonylazo-4-cyanopentyl 4-t-butylazo-4-cyanovalerate were reacted at about 76° C. to obtain a polystyrene containing functional azo groups. The polystyrene-azo polymer was reacted with methyl methacrylate monomer at 130° C. to obtain a block copolymer of polystyrene and poly(methyl methacrylate).

3,763,130

HALOPHENYLLITHIUM INITIATORS FOR CONJUGATED DIENE POLYMERIZATION

William J. Trepka and Richard J. Sonnenfeld, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Original application Aug. 3, 1970, Ser. No. 60,610, now Patent No. 3,694,515. Divided and this application July 20, 1972, Ser. No. 273,602

Int. Cl. C08d *1/20, 3/08*

U.S. Cl. 260—94.2 M 9 Claims

A method of polymerizing conjugated dienes which employs a halophenyllithium initiator prepared from the interreaction of an alkyllithium and a bromoiodobenzene is disclosed.

3,763,131

SYNTHETIC WAX PROCESS

Arthur W. Langer, Jr., Plainfield, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,781

Int. Cl. C08f *1/76, 3/06*

U.S. Cl. 260—94.9 R 9 Claims

A novel synthetic wax process in which ethylene is reacted with either an aromatic or a hydrocarbyl substituted aromatic compound in the presence of a chelated LiR catalyst wherein R is a monovalent hydrocarbon radical containing 1–20 carbon atoms, said reaction taking place also in the presence of a saturated hydrocarbon solvent under reaction conditions to optimize the activity and selectivity of the catalyst to form linear wax compositions having a molecular weight ranging between 500 and 5000. This process also provides for novel wax compositions containing alkyl cycloalkane structures in addition to alkyl aromatic telomer structures.

3,763,132

COMPOSITION COMPRISING CARBOXYL-TERMINATED POLYMERS AND AZIRIDINES

Charles H. Meiser, Jr., Yardley, Pa., assignor to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed Sept. 9, 1965, Ser. No. 486,209

Int. Cl. C08d *5/02*

U.S. Cl. 260—94.7 N 9 Claims

The invention relates to a curable composition comprising carboxyl-containing hydrocarbon polymers, carboxyl-containing halocarbon polymers, carboxyl-containing polyester polymers in admixture with tris[1-(2-methyl)aziridinyl]-phosphine oxide and propylene imine/trimethylol-propane trimethacrylate adduct. These compounds are useful as binders for solid rocket propellants.

3,763,133

METHOD OF ACCELERATING THE CURE OF CARBOXY-TERMINATED POLYBUTADIENE

Grant Thompson and Bobby M. Wall, Brigham City, Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Original application Jan. 29, 1964, Ser. No. 342,592, now Patent No. 3,698,967, dated Oct. 17, 1972. Divided and this application Mar. 8, 1966, Ser. No. 555,655

Int. Cl. C08f *27/00*

U.S. Cl. 260—94.7 A 1 Claim

Process wherein iron octoate or iron linoleate is mixed with carboxyl terminated polybutadiene polymer and a curing agent containing epoxy functional groups, thereby accelerating the cure of said polymer.

3,763,134

TWO-PHASE SLURRY PROCESS FOR THE CHLORONITROSYLATION OF POLYMERS

Pauls Davis, Gibraltar, Mich., and Herwart C. Vogt, Ludwigshafen, Germany, assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 4,754, Jan. 21, 1970. This application Mar. 30, 1972, Ser. No. 239,720

Int. Cl. C08d *5/04*

U.S. Cl. 260—93.7 8 Claims

Polymers can be readily chloronitrosylated in a two-phase slurry system employing fluorocarbons as the reaction medium. The resulting polymers may be cross-linked with heat to provide polymers having improved physical properties.

3,763,135

GAMMA GLOBULIN PRODUCTION FROM COHN FRACTION III USING POLYETHYLENE GLYCOL

Edward Shanbrom, Santa Ana, Martha B. Hainski, Glendale, and John H. Payne, Los Angeles, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Filed Nov. 8, 1971, Ser. No. 196,749

Int. Cl. C07g *7/00*

U.S. Cl. 260—112 B 2 Claims

The method of preparing a gamma globulin concentrate in high yield and purity and suitable for intravenous administration consisting of the multiple fractionation of Cohn Plasma Fraction III with polyethylene glycol 4,000 at a series of predetermined increasing concentrations and under selected pH conditions.

3,763,136

ONE-STEP CHROMATOGRAPHIC ISOLATION OF ORGOTEIN

Wolfgang Huber, San Francisco, Silver H. Chow, Sunnyvale, and Mark G. Saifer, Berkeley, Calif., assignors to Diagnostic Data, Inc., Mountain View, Calif.

Filed Dec. 7, 1971, Ser. No. 205,609

Int. Cl. C07g *7/04*

U.S. Cl. 260—113 18 Claims

Substantially pure orgotein is obtained in a single chromatographic purification step from the mixture of soluble proteins present in beef liver and other animal tissues by chromatographing an aqueous solution of the mixture of proteins having a pH of about 6 and an ionic strength below about 0.01 over a DEAE-cellulose or other weakly basic ion exchange column; eluting a portion of the adsorbed proteins from the column with aqueous eluant of

ionic strength below about 0.02 M until a drop in 265 and 280 nm. absorbances is accompanied by a rise in divalent metal ion content; selectively eluting the adsorbed orgotein with aqueous eluant of a higher ionic strength from about 0.02 to 0.03 M ionic strength while measuring the divalent metal content of the eluate; and separating orgotein from that portion of the eluate having the maximum divalent metal content.

3,763,137

ISOLATION OF ORGOTEIN FROM RED BLOOD CELLS

Wolfgang Huber, San Francisco, Angelika Huebner, Palo Alto, and Mark G. Saifer, Berkeley, Calif., assignors to Diagnostic Data, Inc., Mountain View, Calif.

Filed Dec. 7, 1971, Ser. No. 205,610

Int. Cl. A61k *17/00;* **C07g** *7/04*

U.S. Cl. 260—113 **13 Claims**

Substantially pure orgotein is obtained in a single chromatographic purification step from the mixture of soluble proteins present in bovine, human or other red blood cells by chromatographing an aqueous solution of the mixture of proteins having a pH of about 6 and an ionic strength below about 0.01 M over a DEAE-cellulose or other weakly basic ion exchange column; washing the column free of hemoglobin; selectively eluting the adsorbed orgotein at a higher ionic strength; and separating orgotein from that portion of the eluate having the maximum divalent metal content.

3,763,138

PROCESS FOR PREPARING HYDROLYZED MODIFIED GELATIN FOLLOWED BY REACTION WITH DIBASIC ACID ANHYDRIDE

Bohdan Rakoczy, East Brunswick, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 219,178, Jan. 19, 1972, which is a continuation-in-part of application Ser. No. 49,167, June 23, 1970, both now abandoned. This application May 31, 1972, Ser. No. 258,362

Int. Cl. C08h *1/06;* **C09h** *3/00;* **G03c** *1/02*

U.S. Cl. 260—117 **10 Claims**

A method of preparing a hydrolyzed modified gelatin by first hydrolyzing a gelatin in an aqueous solution of a strong acid (pH 0.1–2.0) or a strong base (pH 10.5–13.5) and then modifying the hydrolyzed gelatin by reacting the product from the hydrolysis with a dibasic acid anhydride. The dibasic acid anhydride may comprise an aliphatic, aromatic, cycloaliphatic, cycloolefinic or heterocyclic radical having the anhydride group attached thereto.

3,763,139

MODIFIED LIGNIN SURFACTANTS

Sten I. Falkehag, Mount Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

No Drawing. Filed May 25, 1972, Ser. No. 256,779

Int. Cl. C07g *1/00*

U.S. Cl. 260—124 R **10 Claims**

The improved lignin surfactant of this invention is a lignin modified by reaction with up to 20 moles, preferably from 2 to 10 moles, per 1000 grams of lignin, of an agent of the type $X(CHR)_m(CH_2)_nY$, wherein X is a halogen, an activated double bond, such as in acrolein, an epoxide ring or a halohydrin, Y is a property group such as sulfonate, phosphonate or hydroxyl, R is a property group, such as hydroxyl, mercaptan, amine or hydrogen, and n and m are integers from 0 to 5, and m and n together are at least 1, to at least partially block the acidic hydroxyl groups of the lignin.

3,763,140

HETEROCYCLIC IMMONIUM GROUP CONTAINING AZO DYES

Roland Entschel, Basel, and Viktor Kaeppeli, Allschwil Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

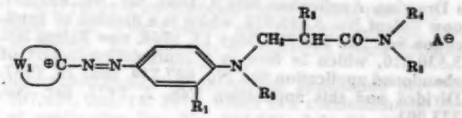
No Drawing. Filed Feb. 13, 1970, Ser. No. 11,350

Claims priority, application Switzerland, Mar. 4, 1969, 3,332/69; Apr. 8, 1969, 5,343/69, 5,344/69; Jan. 21, 1970, 798/70; Jan. 22, 1970, 839/70; Jan. 23, 1970, 923/70

Int. Cl. C09b *29/06, 43/00, 43/06*

U.S. Cl. 260—158 **22 Claims**

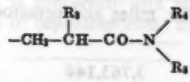
Dyes of the formula



wherein

R_1 is hydrogen, halo, alkyl, substituted alkyl, alkoxy or substituted alkoxy,

R_2 is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl or



R_3 is hydrogen, alkyl or substituted alkyl,

each of R_4 and R_5 is independently hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, aryl or substituted aryl,

is a heterocyclic ring containing at least one quaternary nitrogen group, e.g., benzothiazolium, imidazolium, indazolium, pyrazolium, oxazolium, isoxazolium, pyridiazinium and thiazolium, and substituted derivatives thereof, and

$A^{\ominus}$ is an anion.

The dyes are suitable for dyeing and printing polyacrylonitrile and acrylonitrile copolymer fibers. Resulting dyeings have good fastness to light, washing, perspiration, sublimation, steaming, water and cross-dyeing.

3,763,141

SUBSTITUTED AZOBENZENE COMPOUNDS

Max A. Weaver and Herman S. Pridgen, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed May 13, 1968, Ser. No. 728,788

Int. Cl. C07c *107/06;* **C09b** *29/24*

U.S. Cl. 260—207 **13 Claims**

Monoazo compounds containing a substituted phenyl diazo component and an N,N-di-aralkyl-aniline coupling component in which a ring carbon atom of the aniline coupling component bears an acylamido group. The monoazo compounds are useful as dyes for polyester textile materials.

3,763,142

THIAZOLODIAZEPINES

Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 151,391, July 12, 1971, which is a continuation-in-part of application Ser. No. 715,493, Mar. 25, 1968, both now abandoned. This application Nov. 9, 1971, Ser. No. 197,115

Int. Cl. A61k *27/00*; C07d *53/00, 99/10*
U.S. Cl. 260—239 BC 7 Claims

Thiazolodiazepines; e.g., 3-hydroxy-3-phenyl-2,3,5,6,7,8-hexahydro-thiazolo[3,2-a][1,3]diazepine hydrobromide are useful as anti-depressants and anoretics.

3,763,143

1 - (ALKYLENEIMINOCARBONYL)-N-(SUBSTITUTED CARBAMOYLOXY)THIOFORMIMIDATES

James B. Buchanan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application July 9, 1969, Ser. No. 851,531, now Patent No. 3,658,870, which is a division of application Ser. No. 728,739, May 13, 1968, now Patent No. 3,530,220, which in turn is a continuation-in-part of abandoned application Ser. No. 647,234, June 19, 1967. Divided and this application Feb. 2, 1972, Ser. No. 223,001

Int. Cl. C07d *23/06, 27/04, 29/36*
U.S. Cl. 260—239 E 9 Claims

1-(alkyleneiminocarbonyl)-N-(substituted carbamoyloxy)thioformimidates such as methyl 1-(pyrrolidinocarbonyl)-N-(methylcarbamoyloxy)thioformimidate which are useful in preventing the destructive effects of pests such as insects, ticks, mites and nematodes.

3,763,144

3-SUBSTITUTED BENZODIAZEPINE DERIVATIVES AND THEIR PREPARATION

Joseph Hellerbach, Basel, and Armin Walser, Arlesheim, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed July 16, 1968, Ser. No. 747,773

Claims priority, application Switzerland, Aug. 9, 1967, 11,227/67

Int. Cl. C07d *33/06*
U.S. Cl. 260—239.3 D 5 Claims

1,4-benzodiazepines having an oxygen functionality at the 3-position are converted into corresponding 1,4-benzodiazepines having two oxygen containing groups at the 3-position by oxidizing the former compounds with air or oxygen in the presence of a base. The 3-dioxygenated compounds are useful as anticonvulsants, muscle relaxants, tranquilizers, and sedatives.

3,763,145

HALOGENOSTEROIDS

Georg Anner, Basel, and Peter Wieland, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Apr. 13, 1971, Ser. No. 133,699

Claims priority, application Switzerland, Apr. 17, 1970, 5,792/70, 5,795/70

Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 D 10 Claims

21-fluoro-steroids derivatives of Δ^6-6-fluoro or 6-chloroprogesterone oxygenated in 16- and 17-position have anti-inflammatory, gestagenic and antiovulatory activity. The compounds can be prepared in a manner known per se. The corresponding derivatives nonhalogenated in 6-position are also antiinflammatory and gestagenic agents.

3,763,146

NOVEL 17β-(TETRAHYDROPYRAN-4-YLOXY) STEROIDS

John A. Edwards, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Continuation-in-part of application Ser. No. 135,757, Apr. 20, 1971. This application Feb. 3, 1972, Ser. No. 223,339

Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 R 7 Claims

Novel 17β-(tetrahydropyran-4-yloxy) steroid ethers are disclosed. Specifically, 17β - (tetrahydropyran - 4 - yloxy) ethers of androstane and estrane series are disclosed together with a method for their preparation and a discussion of their unexpected biological activity, inter alia, as anabolic/androgenic and estrogenic/antifertility agents.

3,763,147

3-OXYGENATED-6,7-METHYLENE-20-SPIROXANES

Glen E. Arth, Cranford, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of applications Ser. No. 87,576, Nov. 6, 1970, and Ser. No. 164,931, July 21, 1971. This application May 22, 1972, Ser. No. 255,855

Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 R 16 Claims

The invention disclosed herein relates to 3-oxygenated-6,7-methylene-20-spiroxanes and their 19-nor derivatives which have Δ^4-unsaturation (including $\Delta^{1,4}$) in ring A; hydrogen, keto or β-hydroxy at the 11-position; hydrogen or fluoro at the 9α-position; and hydrogen or keto at the 21-position; and, where the C–21 substituent in keto, the hydrolyzed lactone and pharmacologically acceptable salts thereof. These novels Δ^4-unsaturated-3-oxygenated-6,7-methylene-20-spiroxane compounds are prepared by reacting the corresponding 3-oxygenated-20-spiroxa-4,6-diene with dimethyl-oxo-sulfonium methylide, followed, where $\Delta^{1,4}$-unsaturation is desired, by reaction of the resulting 3-oxygenated-6,7-methylene-20-spirox - 4 - ene-with dichlorodicyanobenzoquinone. The new 3-oxygenated-6,7-methylene-20-spirox-4-enes and 3 - oxygenated-6,7-methylene-20-spiroxa-1,4-dienes are potent aldosterone inhibitors. They block the salt-retaining effects of aldosterone and other salt-retaining steroids and are therefore useful in the alleviation of diseases such as congestive heart failure, nephrosis and cirrhosis of the kidney in which aldosterone secretion is increased.

3,763,148

2,6 - BIS-TRIFLUOROMETHYL-PHENYL - 4 - PYRIDINECARBOXYLIC ACID AND DERIVATIVES THEREOF

Arthur B. Ash, 1519 Chateaufont Place, Detroit, Mich. 48207; Peter Blumbergs, 22021 Sunset, Oak Park, Mich. 48237; Anica Markovac, 18271 Meadowood, Lathrup Village, Mich. 48075; and Maurice P. La Montagne, 3539 Cero Drive, Sterling Heights, Mich. 48077

No Drawing. Original application June 7, 1971, Ser. No. 150,746. Divided and this application July 31, 1972, Ser. No. 276,685

Int. Cl. C07d *31/36*
U.S. Cl. 260—295 R 3 Claims

A series of trifluoromethyl substituted-2,6-diphenyl-4-pyridylcarbinolamines is herein disclosed which has value

in treatment of plasmodial infections. The compounds have substituted phenyl groups at positions 2- and 6- on the pyridine moiety, with the electronegative substituents (the same, or different) present on the phenyl nuclei at least one of which is trifluoromethyl. The syntheses of such series is described, together with a method for separation of racemates of a representative 4-pyridylcarbinolamine type.

3,763,149

BIOLOGICALLY ACTIVE 17 ALPHA-ETHYNYL-16,17-DIHYDROXY-13-ALKYLGON-4-EN-3-ONES

Reinhardt P. Stein, Audubon, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed July 21, 1972, Ser. No. 274,005

Int. Cl. C07c *169/22, 173/00*

U.S. Cl. 260—239.55 **4 Claims**

13 - alkylgona - 16α-hydroxy-3-methoxygona-1,3,5(10)-trien-17-one is converted to its 16α-tetrahydropyranyloxy derivative which is in turn reduced to the corresponding 17β-ol. This compound is converted by Birch reduction to the corresponding 2,5(10)-diene which in turn is oxidized to the 17-ketone. Treatment of the 17-ketone with ethynyl Grignard followed by acid hydrolysis affords the 16α-hydroxy title compound. Treatment of the 17-ketone with lithium acetylide-ethylene diamine complex affords the 16β-hydroxy title compound. The title compounds have progestational activity.

3,763,150

ADAMANTANE DERIVATIVES

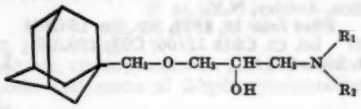
Andrea Pedrazzoli, Milan, and Leone Dall'Asta, Pavia, Italy, assignors to Societe d'Etudes de Recherches et d'Applications Scientifiques et Medicales-E.R.A.S.M.E., Paris, France

No Drawing. Original application June 4, 1970, Ser. No. 43,582, now Patent No. 3,663,617. Divided and this application Feb. 10, 1972, Ser. No. 225,349

Int. Cl. C07d *27/04, 29/18, 41/04*

U.S. Cl. 260—239 B **6 Claims**

Adamantane derivatives having the following general formula:



and their pharmaceutically acceptable acid addition salts are useful as sympathicolytic, myolitic, analgesic and, particularly, as local anaesthetic and β-adrenergic blocking agents. The novel compounds are prepared starting from 1-hydroxy-methyl-adamantane through the new intermediate 1-(adamantyl-methyloxy)-2,3-epoxypropane.

3,763,151

HETEROCYCLIC QUATERNARY AMMONIUM COMPOUNDS

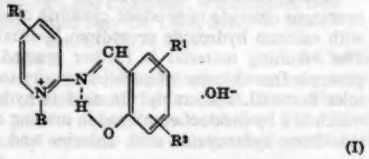
John Kazan, Jr., Bridgewater Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Dec. 4, 1968, Ser. No. 781,277

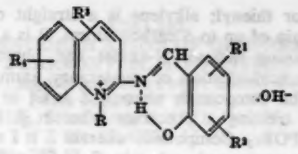
Int. Cl. C09b *23/00*

U.S. Cl. 260—240 G **1 Claim**

Heterocyclic quaternary ammonium compounds of the formulas:



(I)



(II)

wherein R is alkyl (C_1–C_{18}), cycloalkyl or aralkyl; R^1 is an electronegative substituent; R^2 is hydrogen or R^1; and R^3 and R^4 are lower alkyl or halogen.

These compounds are prepared by reacting the corresponding salicylaldehydes with 1,2-dihydro-2-imino-1-alkylpyridines or -quinolines. The products in suitable media exhibit thermochromism, which is also dependent on the amount of moisture in the system, and are therefore useful as temperature indicators and water detectors.

3,763,152

NEUTRAL CEPHALOSPORIN ANHYDRIDES

Milton Wolf, West Chester, and John H. Sellstedt, King of Prussia, Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 107,437, Jan. 18, 1971, which is a continuation-in-part of application Ser. No. 843,841, July 22, 1969, now Patent No. 3,635,953, dated Jan. 18, 1972, which in turn is a continuation-in-part of abandoned application Ser. No. 760,090, Sept. 17, 1968. This application Aug. 11, 1971, Ser. No. 170,687

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **3 Claims**

This invention is concerned with novel antibiotically active anhydrides of cephalosporanic acid derivatives.

3,763,153

BENZOTHIAZINES

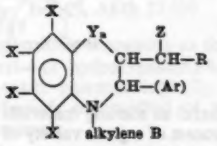
John Krapcho, Somerset, and Chester F. Turk, Elizabeth, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Feb. 22, 1972, Ser. No. 228,360

Int. Cl. C07d *93/12*

U.S. Cl. 260—243 R **5 Claims**

Anti-inflammatory agents of the formula



(I)

wherein X is hydrogen, halogen, alkyl, haloalkyl, alkoxy, hydroxy, alkylthio, nitro, alkylsulfonyl, amino, alkanoylamino, or mono- or dialkylamino wherein any of the foregoing alkyl or substituted alkyl radicals contain up to 8 carbon atoms; Y is —O—, —S—, —CH_2—,

—CH_2CH_2—,

—SO—, —SO_2—, or Y may be absent entirely; R is alkyl of up to 8 carbon atoms, cycloalkyl of from 3 to 8 carbon atoms, aryl of up to 10 carbon atoms or aralkyl of up to 10 carbon atoms; Z is Cl, Br, F or I; Ar is a mono- or bicyclic aryl radical selected from the group consisting of phenyl, X-substituted phenyl wherein X is as defined above, alkylenedioxyphenyl pyridyl, furyl,

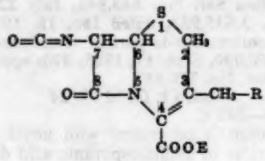
naphthyl or thienyl; alkylene is a straight or branched carbon chain of up to 6 carbon atoms, B is a basic nitrogen containing radical; N-oxides and pharmaceutically acceptable acid-addition or quaternary ammonium salts thereof. The compounds wherein Z is Cl or Br are obtained by treating a precursor wherein Z is OH with $POCl_3$ or $POBr_3$. Compounds wherein Z is I are obtained by heating compounds wherein Z is Cl with NaI. The fluoro compounds are obtained from either the chloro, bromo, or iodo analogs by heating with excess KF in solvents such as acetamide, nitrobenzene, DMSO, ethylene glycol or diethylene glycol. Heating in the latter solvent at 125° C. with 100% excess KF is preferred.

3,763,154
CEPHALOSPORANIC ACID DERIVATIVES

Peter Wolfgang Henniger, Leiden, Netherlands, assignor to Kon. Ned. Gist- & Spiritusfabriek N.V., Delft, Netherlands

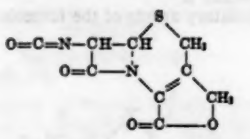
No Drawing. Filed Dec. 17, 1970, Ser. No. 99,281
Claims priority, application Netherlands, Dec. 18, 1969, 61,842
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 8 Claims

Novel 7-isocyanato-cephalosporanic acid derivatives of the formula



(I)

wherein R is selected from the group consisting of hydrogen, a protected hydroxy group and acyloxy of an organic carboxylic acid of 1 to 18 carbon atoms and E is an easily removable, protective ester group, and the lactone of 7-isocyanato-(desacetyl-)cephalosporanic acid of the formula



(II)

are extremely useful as starting materials for the preparation by a new process of a great variety of cephalosporanic acid derivatives as the isocyanato group in the 7-position can readily be converted into a substituted amino group and their preparation and to novel cephalosporanic acid derivatives having antibiotic activity.

3,763,155
AMINOSPIROTHIAZINES AND PROCESSES THEREFOR

Noal Cohen, Montclair, and Gabriel Saucy, Essex Fells, N.Y., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Aug. 24, 1971, Ser. No. 174,543
Int. Cl. C07d *93/06*
U.S. Cl. 260—243 R 10 Claims

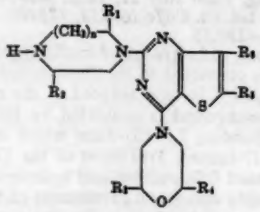
2-amino-1,3-thiazines spiro fused to an oxygenated heterocyclic ring useful as anti-inflammatory, antialgal, amoebicidal and anoretic agents and processes therefor.

3,763,156
2-HETEROCYCLIC AMINO-4-MORPHOLINO-THIENO[3,2-d]PYRIMIDINES

Eberhard Woitun, Gerhard Ohnacker, Berthold Narr, Ulrike Horch, and Rudolf Kadatz, Biberach (Riss), Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Filed Jan. 22, 1971, Ser. No. 108,988
Claims priority, application Germany, Feb. 28, 1970, P 20 03 714.3; Nov. 26, 1970, P 20 58 086.3, P 20 58 085.2
Int. Cl. C07d *87/46*
U.S. Cl. 260—247.1 1 Claim

Compounds of the formula



wherein

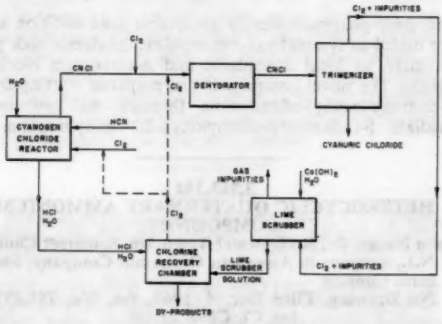
R_1, R_2, R_3, R_4 and R_6, which may be identical to or different from each other, are each hydrogen or methyl,
R_5 is hydrogen, methyl or phenyl, and
n is 1 or 2,

and non-toxic, pharmacologically acceptable acid addition salts thereof; the compounds as well as their salts are useful as inhibitors of thrombocyte aggregation in blood.

3,763,157
RECOVERY AND RECIRCULATION OF CHLORINE IN CYANURIC CHLORIDE PRODUCTION

Yelagondahally S. Suryanarayana, Mobile, and William M. Britton, Millry, Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 18, 1971, Ser. No. 154,454
Int. Cl. C01b *21/00*; C07c *119/00*
U.S. Cl. 260—248 C 3 Claims



Excess chlorine employed in the trimerization of cyanogen chloride to produce cyanuric chloride is reacted with calcium hydroxide or sodium hydroxide and water. The resulting material is further reacted with acid to generate free chlorine of sufficient purity to be used as an inlet material. Preferably the acid is hydrogen chloride which is a by-product employed in making cyanogen chloride from hydrocyanic acid, chlorine and water.

3,763,158

3-PHENYL-(3H)-BENZO-1,2,3-TRIAZINONES-(4)

Gerhard Satzinger, 10 Vogesenstrasse; and Manfred Herrmann, 3a Bahnhofstrasse, both of 7803 Gundelfingen, Germany; and Karl-Otto Vollmer, 9b Mozartstrasse, 7800 Freiburg, Germany

No Drawing. Filed Dec. 9, 1971, Ser. No. 206,515
Claims priority, application Germany, Dec. 14, 1970, P 20 61 474.8
Int. Cl. C02d *55/08*
U.S. Cl. 260—248 AS 14 Claims

The present invention relates to 3-phenyl-(3H)-benzo-1,2,3-triazinones-(4) and to processes for their preparation. These compounds exhibit anti-secretory, muscle relaxant and tranquilizing properties while having very low toxicity.

3,763,159

TRIAZINYL-ANTHRAQUINONE DYES

Trevor James Smith, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Sept. 24, 1971, Ser. No. 183,637
Claims priority, application Great Britain, Oct. 15, 1970, 49,061/70
Int. Cl. C07d *55/46*
U.S. Cl. 260—249 1 Claim

Water-soluble reactive dyes for wool prepared by the condensation of 1-amino - 2 - sulpho-4-(aminoanilino) anthraquinone with cyanuric chloride (or similar triazine or pyrimidine compound) and a substituted phenol or thiophenol wherein the substituent is a hydrocarbyl radical (other than methyl) attached by direct link or O or S bridge.

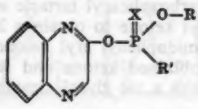
3,763,160

PHOSPHORUS-CONTAINING ESTERS OF 2-HYDROXYQUINOXALINE

Karl-Julius Schmidt, Wuppertal-Vohwinkel, and Ingeborg Hammann, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 20, 1966, Ser. No. 551,553
Claims priority, application Germany, May 26, 1965, F 46,162
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 R 10 Claims

Phosphoric, thionophosphoric, phosphonic, and thionophosphonic acid esters of 2-hydroxyquinoxaline of the formula



in which R is alkyl, R' is alkyl, alkoxy or phenyl (said alkyl and alkoxy having 1 to 4 carbon atoms), and X is oxygen or sulfur, which possess pesticidal, especially insecticidal and acaricidal, properties and which may be produced by reacting 2-hydroxyquinoxaline with the corresponding phosphorus-containing ester halide.

3,763,161

TETRASUBSTITUTED DICYANOPYRAZINES AND RELATED COMPOUNDS

Donald R. Hartter, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 13, 1970, Ser. No. 54,617
Int. Cl. C07d *51/76*
U.S. Cl. 260—250 R 6 Claims

Certain novel cyano-substituted pyrazines, e.g., tetracyanopyrazine, are obtained, for example, from diiminosuccinonitrile and/or diaminomaleonitrile. The novel compounds oxalyl cyanide and iminooxalyl cyanide are also described.

3,763,162

TRANSESTERIFICATION OF QUINOXALINE-2-CARBOXYLIC ACID ESTERS

Robert V. Kasubick, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Aug. 6, 1971, Ser. No. 169,844
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 Q 7 Claims

Synthesis of 2-hydroxyethyl esters of 2-quinoxalinecarboxylic acid-1,4-dioxides through the transesterification of the lower alkyl esters with ethylene glycol in the presence of oxygen and a catalytic amount of calcium hydroxide or barium hydroxide at a temperature of 30–50° C.

3,763,163

4-(N,O-DISUBSTITUTED-HYDROXYLAMINO)-QUINAZOLINES

Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned applications Ser. No. 37,328 and Ser. No. 37,329, both May 14, 1970. This application Nov. 22, 1971, Ser. No. 201,182
Int. Cl. C07d *51/48*
U.S. Cl. 260—256.4 Q 12 Claims

The invention discloses compounds of the class of 4-(N,O - disubstituted-hydroxylamino)-quinazolines, e.g. 4-(N,O - dimethylhydroxylamino)-6,7-dimethoxy-quinazoline maleate. Such compounds are useful as pharmaceutical agents, e.g. bronchodilators. The compounds may be prepared by reacting a 4-haloquinazoline with the appropriate corresponding N,O-disubstituted-hydroxylamine.

3,763,164

N-CINNAMYL - 4-(3'-HYDROXYPHENYL) - 4-PROPIONYL-PIPERIDINE AND SALTS FOR RELIEVING PAIN

Herbert Merz, Ingelheim am Rhein, Germany, Kurt Freter, Beaconsfield, Quebec, Canada, and Karl Zelle, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

No Drawing. Application Feb. 19, 1971, Ser. No. 117,121, now Patent No. 3,708,597, which is a continuation of application Ser. No. 869,955, Oct. 29, 1969, which is a continuation of application Ser. No. 744,325, July 12, 1968, which is a continuation-in-part of application Ser. No. 350,128, Mar. 6, 1964, which in turn is a continuation-in-part of application Ser. No. 177,171, Mar. 5, 1962, all now abandoned. Divided and this application Aug. 29, 1972, Ser. No. 284,603
Int. Cl. A61k *27/00*
U.S. Cl. 424—267 3 Claims

Analgesic composition containing as the active ingredient N - cinnamyl-4-(3'-hydroxyphenyl)-4-propionyl-piperidine and non-toxic, pharmacologically acceptable acid addition salts thereof, and method of relieving pain in warm-blooded animals.

3,763,165

4-AZATRICYCLO[4.3.1.1^{3,8}]UNDECAN AND RELATED COMPOUNDS

Venkatchala Lakshima Narayanan, North Brunswick, and Linda Louise Setescak, Cranbury, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Aug. 21, 1968, Ser. No. 754,460
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 PC 2 Claims

This invention relates to a novel series of compounds characterized particularly by the azatricyclo[4.3.1.1^{3,8}]undecane ring. These include 4-azatricyclo[4.3.1.1^{3,8}]undecan-5-one, 4-azatricyclo[4.3.1.1^{3,8}]undecane and nitrogen substituted derivatives of each of these and their salts. The compounds are useful as antiviral, cardiovascular or antiinflammatory agents, or as intermediates for such substances.

3,763,166

N,N'-BIS(3-(3,5-DI-t-BUTYL-4-HYDROXYPHENYL) LOWER ALKANOYL)PIPERAZINES

Martin Dexter, Briarcliff Manor, John Denon Spivack, Spring Valley, and David Herbert Steinberg, Bronx, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Dec. 29, 1970, Ser. No. 694,370, now Patent No. 3,584,047. Divided and this application June 5, 1970, Ser. No. 57,396

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 C 2 Claims

Polyamides of alkylhydroxyphenylalkanoic acids and polyamines prepared by amidation procedures, are stabilizers of organic material otherwise subject to oxidative deterioration.

3,763,167

PROCESS OF PURIFYING ORIPAVINES

William R. Hydro, Bel Air, Md., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed June 24, 1970, Ser. No. 48,782

Int. Cl. A61k *27/00*; C07d *33/00*

U.S. Cl. 260—285 6 Claims

The process of purifying oripavines, tranquilizers for animals, comprising the contacting highly colored oripavines with a liquid comprising an immiscible solvent and aqueous solution of sulfur containing compounds, separating the solvent phase with subsequent drying and recovering the oripavines.

3,763,168

N-(3-QUINUCLIDINYL) ACYLANILIDES

Philip M. Carabateas, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Original application Sept. 9, 1968, Ser. No. 758,924, now Patent No. 3,655,675. Divided and this application Aug. 2, 1971, Ser. No. 168,483

Int. Cl. C07d *39/06*

U.S. Cl. 260—293.53 3 Claims

An N-[1-Z-4(or 3)-piperidyl]acylanilide, having antidiarrheal utility, is prepared by reacting an N-[4(or 3)-piperidyl]acylanilide with a Z-halide or by reacting a 4(or 3)-(Q-anilino)-1-Z-piperidine with an acyl halide or anhydride, where Z is lower-alkyl, 3-cyano-3,3-diphenylpropyl or 2-cyanoethyl, acyl is propionyl, lactyl, dichloroacetyl or carbethoxy, and Q is hydrogen or $(halo)_n$ where halo is fluoro or chloro and n is 1 or 2. Also included are corresponding N-[4(or 3)-pyridyl]-, N-(3-quinuclidinyl)-, and N-(8-Z-3-nortropanyl)-acylanilides.

3,763,169

ISONIPECOTIC ACID COMPOUNDS

Charles Malen, Fresnes, and Xavier Pascaud, Paris, France, assignors to Science Union et Cie., Suresnes, France

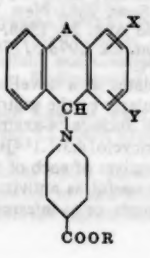
No Drawing. Filed Nov. 22, 1971, Ser. No. 203,101

Claims priority, application Great Britain, Dec. 2, 1970, 57,260/70

Int. Cl. C07d *67/00*

U.S. Cl. 260—293.57 4 Claims

Isonipecotic acid compounds of the formula:



wherein A is $—CH_2—CH_2—$, $—CH=CH—$, $—CH_2—S—$ or $—CH_2—O—$

X and Y are hydrogen, halogen or lower alkoxy, and R is hydrogen or lower alkyl.

These compounds possess gastric antisecretory and antiulcer properties.

3,763,170

1 OR 4 SULPHOARYL-6-HYDROXY-2-PYRIDONES

Peter William Austin and Allen Crabtree, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Sept. 20, 1971, Ser. No. 182,145

Int. Cl. C07d *31/48*

U.S. Cl. 260—294.8 F 5 Claims

By heating certain 3-cyano-6-hydroxy-pyridones containing a benzene or benzyl nucleus in the 1 and/or 4-position the cyano group is converted to aminocarbonyl or replaced by H and a sulphonic acid group is introduced into the benzene or benzyl substituent. The products are useful coupling components for manufacture of water-soluble dyes.

3,763,171

PREPARATION OF INTERMEDIATES FOR THE PREPARATION OF 1,3 - DIHYDRO - 2H-1,4-BENZODIAZEPIN-1-ONES

Ronald J. McCaully, Malvern, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Feb. 26, 1969, Ser. No. 802,345

Int. Cl. C07c *103/06*

U.S. Cl. 260—295 PA 1 Claim

Two routes for the preparation of 2-(2-acylamido-2-amino)-acetamidophenyl aryl ketones, used as intermediates in the synthesis of psycholeptic 1,3-dihydro-2H-1,4-benzodiazepin-2-ones are described. The first of these routes involves the formation of a 2-(2,2-diacyloxy)acetamidophenyl aryl ketone from glyoxylic acid and an aryl phenyl ketone via either a 2,2-diacyloxy acetyl halide or a 2,2-diacyloxy acetyl anhydride, conversion thereof to the corresponding 2-(2-acylamido-2-hydroxy)acetamidophenyl aryl ketone directly or via the 2-(2,2-dihydroxy) acetamidophenyl aryl ketone, formation of the corresponding 2-(2-acylamido-2-halo)acetamidophenyl aryl ketone, and conversion to the 2-(2-acylamido-2-amino) acetamidophenyl aryl ketone. The second route forms the 2-(2,2-dihydroxy)acetamidophenyl aryl ketone by reacting a 2,3-dicarboxylicacyl tartaric anhydride with a 2-aminophenyl aryl ketone to obtain a 2-(3-carboxy-2,3-acyloxy)propionamidophenyl aryl ketone, selectively hydrolyzing the so-obtained ketone and selectively oxidizing the product with a *vic* glycol cleaving agent.

3,763,172

ALKOXY DERIVATIVES OF PYRAZOLOPYRIDINE CARBOXYLIC ACIDS AND ESTERS

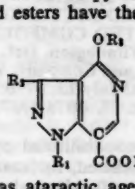
Theodor Denzel, Nurnberg, and Hans Hoehn, Tegernheim, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Jan. 12, 1972, Ser. No. 217,295

Int. Cl. C07d *31/36*

U.S. Cl. 260—295.5 B 5 Claims

New alkoxy derivatives of pyrazolo[4,3-c]pyridine-7-carboxylic acids and esters have the general formula



They are useful as ataractic agents. In addition, the new compounds increase the intracellular concentration of adenosine-3',5'-cyclic monophosphate.

3,763,173

2 - HYDROXYMETHYL - 3 - HYDROXY-6-(1-HYDROXY - 2-[3,4 - METHYLENEDIOXYPHENYL-ALKYLAMINO]ETHYL)PYRIDINES

Wayne E. Barth, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Original application Feb. 16, 1971, Ser. No. 115,878. Divided and this application May 25, 1972, Ser. No. 256,641

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 B 3 Claims

2-hydroxymethyl-3-hydroxy-6-(1-hydroxy - 2 - aminoethyl)pyridines and salts thereof, a novel class of β-adrenergic agonist bronchodilators in mammals, and 2-hydroxymethyl-3-benzyloxy - 6 - pyridinecarboxaldehyde a valuable intermediate in the preparation of the subject compounds.

3,763,174

2-(3,4-DICHLOROANILINO)QUINOLIZINIUM BROMIDE

Robert J. Alaimo and Marvin M. Goldenberg, Norwich, N.Y., assignors to Morton-Norwich Products, Inc.

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,312

Int. Cl. C07d *39/12*

U.S. Cl. 260—296 B 1 Claim

2-(3,4 - dichloroanilino)quinolizinium bromide is an effective antispasmodic, antiulcerogenic and anti-inflammatory drug.

3,763,175

METHOD FOR THE PREPARATION OF CYCLIC NITRILE SULFITES

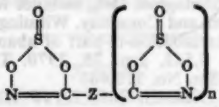
Emmett H. Burk, Jr., Glenwood, Ill., and Donald D. Carlos, Crown Point, Ind., assignors to Atlantic Richfield Company

No Drawing. Continuation-in-part of application Ser. No. 729,940, May 17, 1968, which is a continuation of abandoned application Ser. No. 573,459, Aug. 19, 1966, which in turn is a continuation-in-part of application Ser. No. 471,714, July 13, 1965, now Patent No. 3,268,542, and abandoned applications Ser. Nos. 502,327, 502,328, 502,347, 502,348, 502,450, 502,464, and 502,604, all Oct. 22, 1965. This application Feb. 25, 1969, Ser. No. 802,266

Int. Cl. C07d *91/04*

U.S. Cl. 260—301 12 Claims

Cyclic nitrile sulfites of the formula:



wherein Z is a hydrocarbon radical and *n* is 0 to 3, are prepared by reacting the corresponding hydroxamic acid with at least about 5 moles of thionyl chloride per mole of hydroxamic acid group, the amount of thionyl chloride being sufficient to produce a fluid reaction medium. The excess thionyl chloride reactant serves as a solvent for the hydroxamic acid reactant, and the reaction is conducted in the substantial absence of an added solvent for the hydroxamic acid.

3,763,176

BACTERICIDAL 3-HALO-5-ALKYL-Δ^2-THIADIAZOLIN-4-ONE

Gustave K. Kohn, Berkeley, and Malcolm S. Singer, Richmond, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,961

Int. Cl. C07d *91/68*

U.S. Cl. 260—302 D 3 Claims

The present invention is directed to 3-halo-5-alkyl-Δ^2-thiadiazolin-4-ones and their use as bactericides.

3,763,177

BI-2-OXAZOLINE AND OXAZINE COMPOUNDS DERIVED FROM CYANOETHYLATED POLY-(ETHYLENE AND PROPYLENE) GLYCOLS

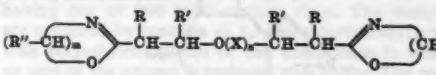
Donald A. Tomalia and David P. Sheetz, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 835,910, June 16, 1969. This application Mar. 29, 1971, Ser. No. 129,262

Int. Cl. C07d *85/36*

U.S. Cl. 260—307 F 3 Claims

Bi-2-oxazoline and oxazine compositions derived from cyanoethylated poly(ethylene and propylene) glycols and having the formula:



where R, R', and R'' can be H or alkyl containing from 1 to 4 carbon atoms, where X is (C_2H_4O) or (C_3H_6O), where *n* is a value from 1 to 50 inclusive and where *m* is 2 or 3.

3,763,178

IMIDAZOLINYL PHENYL CARBONYL ACID ADDITION SALTS AND RELATED COMPOUNDS

Theodore S. Sulkowski, Wayne, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned applications Ser. No. 487,587, Sept. 15, 1965, Ser. No. 576,833, Sept. 2, 1966, and Ser. Nos. 622,918 and 622,931, both Mar. 14, 1967. This application Sept. 5, 1968, Ser. No. 757,792

Int. Cl. C07d *49/34, 57/02*

U.S. Cl. 260—309.6 10 Claims

This invention is concerned with tetrahydropyrimidinyl phenyl carbonyl acid addition salts, imidazolinyl phenyl carbonyl acid addition salts, dihydroimidazoisoindolols, tetrahydropyrimidoisoindolols, and tetrahydropyrimidoisoindolol acid addition salts which are all pharmacologically efficacious as anti-depressants. The tetrahydropyrimidinyl phenyl carbonyl acid addition salts, the tetrahydropyrimidoisoindolols and the tetrahydropyrimidoisoindolol acid addition salts are also efficacious as diuretics while the imidazolinyl phenyl carbonyl acid addition salts and the dihydroimidazoisoindolols are efficacious as anorexiants. This invention is also concerned with several processes for the preparation of these compounds.

3,763,179

2-IMIDAZOL-1-YL BENZOPHENONES

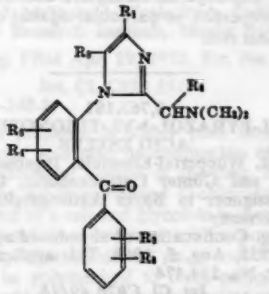
Martin Gall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed May 5, 1972, Ser. No. 250,521

Int. Cl. C07d *57/02*

U.S. Cl. 260—309 10 Claims

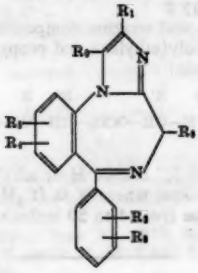
2-imidazol-1-yl benzophenones of the Formula II



(II)

wherein R_0 and R_1 are selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, and hydroxymethyl; wherein R_2, R_3, R_4, and R_5 are selected

from the group consisting of hydrogen, alkyl or 1 to 3 carbon atoms, inclusive, halogen, nitro, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, in which carbon chain moieties are of 1 to 3 carbon atoms, inclusive, and dialkylamino in which the alkyl group is defined as above; and wherein R_6 is selected from the group consisting of hydrogen, and alkyl defined as above, are produced by heating an imidazolobenzodiazepine of the Formula I



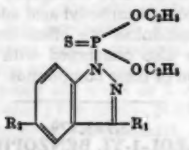
(I)

wherein R_0, R_1, R_2, R_3, R_4, R_5, and R_6 are defined as above with formic acid and formaldehyde.

The compound of Formula II as well as the pharmacologically acceptable acid addition salts thereof are useful as sedatives and tranquilizers particularly in mammals and birds.

3,763,180
1-O,O-DIETHYLTHIOPHOSPHONYL-INDAZOLES
Michel Sauli, Paris, France, assignor to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Jan. 23, 1970, Ser. No. 5,347
Claims priority, application France, Jan. 27, 1969, 6901549; Oct. 22, 1969, 6936237
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C **13 Claims**

Organophosphorus compounds of the formula:



wherein R_1 represents halogen, alkyl of 1 through 4 carbon atoms, phenyl, cyano, carbamoyl or thiocarbamoyl, and R_2 represents hydrogen, halogen or nitro, possess useful insecticidal properties, in particular against Diptera, Coleoptera, Lepidoptera, Hemiptera and Orthoptera, and fungicidal properties, in particular against cucumber mildew and wheat rust.

3,763,181
5-METHYL-PYRAZOL-3-YL-THIONOPHOSPHONIC ACID ESTERS
Christa Fest, Wuppertal-Elberfeld, Ingeborg Hammann, Cologne, and Günter Unterstenhöfer, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Continuation of abandoned application Ser. No. 847,733, Aug. 5, 1969. This application Dec. 30, 1971, Ser. No. 214,474
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 R **4 Claims**

5-methyl-pyrazol-3-yl-thionophosphonic acid esters, i.e. (alkyl and phenyl)-O-alkyl-O-(5-methyl-pyrazol - 3 - yl)-thionophosphonic acid esters, which possess arthropodicidal, especially acaricidal and insecticidal, properties and which may be produced by conventional methods.

3,763,182
METHOD FOR PRODUCING METAL PHTHALOCYANINE TYPE PIGMENT
Shojiro Horiguchi, Shozo Ohira, Yoshio Abe, and Toboru Hosoda, Tokyo, Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan
No Drawing. Filed Feb. 10, 1970, Ser. No. 10,269
Int. Cl. C09b *47/04*
U.S. Cl. 260—314.5 **16 Claims**

Method for producing a metal phthalocyanine type pigment which comprises subjecting an o-dinitrile type compound and a metallic substance capable of forming a central nucleus of the phthalocyanine type pigment to condensation reaction at a low temperature in the presence of an alkaline substance selected from the group consisting of hydroxide, oxide, peroxide and carbonate of alkali metal and of alkaline earth metal, a compound capable of forming a complex compound with the metal of the metallic substance capable of forming a central nucleus of the phthalocyanine type pigment and a hydrophilic organic solvent having hydroxyl radical. By this method, products having clear color tone, fine crystal state, large coloring power, soft texture and superior resistance to heat can be obtained easily with a high yield without the necessity of after treatment of pigmentation.

3,763,183
1,2,3,10,11,11a-HEXAHYDRO-5H-PYRROLO [2,1-c][1,4]BENZODIAZEPINES
Philip M. Carabateas, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
No Drawing. Original application Apr. 20, 1970, Ser. No. 30,315. Divided and this application July 10, 1972, Ser. No. 270,463
Int. Cl. C07d *53/06*
U.S. Cl. 260—326.3 **17 Claims**

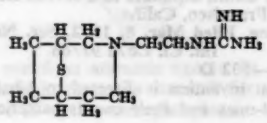
Heterocyclo[1,4]benzodiazepine derivatives having analgesic antagonist, anti-inflammatory, and psychomotor depressant activity.

3,763,184
PHARMACEUTICALLY ACTIVE PYRROLIDINO-NAPHTHOTHIOPHENES
Ian Wellings, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of abandoned application Ser. No. 6,542, Jan. 28, 1970. This application Sept. 7, 1971, Ser. No. 178,466
Int. Cl. C07d *27/48*
U.S. Cl. 260—326.1 **4 Claims**

This invention relates to a class of novel pyrrolidinonaphthothiophenes and their use as pharmaceutical agents.

3,763,185
[2-(9-THIA-3-AZABICYCLO[4.2.1]NONAN-3-YL)ETHYL]-GUANIDINES
Lawrence D. Wise and Glenn C. Morrison, Dover, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Filed July 31, 1972, Ser. No. 276,873
Int. Cl. A61k *27/00*; C07d *65/04*
U.S. Cl. 260—329 F **4 Claims**

This invention relates to new and useful [2-(9-thia-3-azabicyclo[4.2.1]nonan-3-yl)ethyl]-guanidines having the formula:



and their corresponding sulfoxides and sulfones. Also embraced within the scope of this invention are the pharmaceutically acceptable acid addition salts of the afore-mentioned guanidines, and including the quaternary ammonium salts and N-oxides. A process for preparing the final compounds and the intermediates of the invention, starting with 8-thiabicyclo[3.3.1]octan-3-one, is described. The compounds of this invention have interesting and significant pharmacological activity as anti-hypertensives.

3,763,186

EPITHIO DERIVATIVES OF AMINOALKYL SUBSTITUTED DIBENZOCYCLOHEPTENES

Niels Lassen, Gentofte, Denmark, assignor to Kefalas A/S, Copenhagen-Valby, Denmark

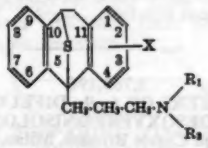
No Drawing. Filed Oct. 21, 1971, Ser. No. 191,500

Claims priority, application Great Britain, Oct. 30, 1970, 51,829/70

Int. Cl. A61k *27/00*; C07d *63/04*

U.S. Cl. 260—330.5 14 Claims

Dibenzocycloheptenes of the general formula:



(I)

wherein R_1 and R_2 each represents hydrogen or an alkyl group with 1 to 4 carbon atoms, provided that R_1 and R_2 may not both represent hydrogen, and X represents hydrogen, an alkyl group with 1 to 4 carbon atoms, an alkyloxy group with 1 to 4 carbon atoms, halogen or trifluoromethyl, as well as non-toxic acid addition salts thereof, and preparation of same. Intermediates useful in the preparation of said compounds as well as preparation of said intermediates. Pharmaceutical compositions containing a compound of Formula I or an acid addition salt thereof, and alleviation, palliation, mitigation or inhibition of the manifestations of certain physiological-psychological abnormalities of animals therewith.

3,763,187

THIENYLIODONIUM SALTS

Clarence L. Moyle, Clare, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 154,182, June 17, 1971, which is a continuation-in-part of abandoned application Ser. No. 806,739, Mar. 12, 1969, which in turn is a continuation-in-part of abandoned application Ser. No. 677,772, Oct. 24, 1967.

This application June 22, 1972, Ser. No. 265,395

Int. Cl. A61k *27/00*; C07d *63/14*

U.S. Cl. 260—332.3 R 9 Claims

The present invention is concerned with novel chemical compounds and methods and compositions employing the same, and is particularly directed to a class of thienyliodonium salts which are of value as antimicrobials and microbicides for the control of many bacterial organisms such as the gram-negative and gram-positive types, the molds, the mildews, the fungi and the slimes, and are of particular value for the preservation of paper, plaster, wallboards, fabric, textiles, cooling waters, plasticizers, latices, polymers, resins, adhesives, inks, paints, fuels, cutting oils, greases, seeds, terrestrial plants, detergents, soaps, shampoos and wood.

3,763,188

SPIRO[1,1-POLYETHYLENEDI(OXYMETHYL)]-3-OXETANES

Carl G. Krespan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 19, 1972, Ser. No. 218,000

Int. Cl. C07d *21/00*

U.S. Cl. 260—338 8 Claims

Described are macrocyclic polyethers and thioethers having one or two spiro-oxetane rings. The compounds are prepared by reaction of 3,3-bis(chloromethyl)oxetane with polyethylene glycol or like compounds in which all or part of the oxygen is replaced with sulfur. The reaction is conducted in a suitable inert solvent. The compounds can be polymerized by opening of the oxetane ring with cationic initiators. The compounds and polymers can be employed to extract metals and particularly alkali or alkaline earth metal salts from water and are thus useful in various water-treatment procedures. Valuable heavy metals can also be extracted, particularly with the sulfur-containing compounds and their polymers.

3,763,189

2,2-BIS(CARBOXYMETHYL)-3-OXA-4-CARBOXY-4-HYDROXY-BUTANOIC ACID LACTONE

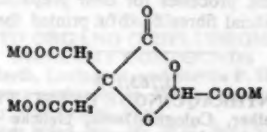
Russel D. Harken, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Mar. 29, 1972, Ser. No. 239,353

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.2 2 Claims

Salts of 2,2-bis(carboxymethyl)-3-oxa-4-carboxy-4-hydroxy-butanoic acid lactone represented by the formula



wherein M is an alkali metal or ammonium, are useful sequestrants and detergency builders. The acid form of such compounds is a useful intermediate for their preparation.

3,763,190

PREPARATION OF PURE GLYCOLIDE

Donald L. Ross, Palo Alto, Hugh C. Barrett, Stanford, and Gerald J. McDonald, Menlo Park, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

No Drawing. Filed Apr. 19, 1972, Ser. No. 245,623

Int. Cl. C07d *15/16*

U.S. Cl. 260—340.2 1 Claim

Glycolide is prepared in highly pure form from O-haloacetylglycolic acid salts by elimination of a mineral acid salt and attendant closure of the ring. In a typical preparation, the novel compound O-chloroacetylglycolic acid is converted to a salt and glycolide is then formed as the salt is heated in a vacuum sublimation apparatus wherein the glycolide condenses on a cool surface. The glycolide can be polymerized to form polyglycolic acid of high purity which is useful in the fabrication of sutures which are absorbable in body fluids.

3,763,191

PROCESS FOR THE PRODUCTION OF ANTHRAQUINONE-α-SULPHONIC ACIDS

Reinold Schmitz, Blecher, and Klaus Alberti, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 20, 1971, Ser. No. 173,658
Claims priority, application Germany, Aug. 21, 1970, P 20 41 547.8
Int. Cl. C09b 1/00
U.S. Cl. 260—370 6 Claims

Process for the production of anthraquinone-α-sulphonic acids by the sulphonation of anthraquinones with a free α-position in the presence of catalysts in solvents, optionally at an elevated temperature, characterised in that metals of the 1st or 8th subsidiary group of the Periodic System or compounds containing such metals are used as catalysts.

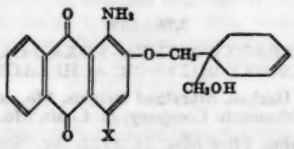
3,763,192

ANTHRAQUINONE DYESTUFFS

Louis Antoine Cabut, Nogent-sur-Oise, France, assignor to Ugine Kuhlmann, Paris, France

No Drawing. Filed Jan. 13, 1971, Ser. No. 106,232
Claims priority, application France, Jan. 29, 1970, 7003083
Int. Cl. C09b 1/52
U.S. Cl. 260—373 3 Claims

Dyestuffs of the formula:



in which X represents a hydroxy, amino or —NH—SO_2R group and R represents an alkyl or aryl radical either unsubstituted or substituted by at least one alkyl radical which may contain up to 4 carbon atoms, mixtures of these dyestuffs, processes for their preparation and synthetic or artificial fibres dyed or printed therewith.

3,763,193

ANTHRAQUINONE DYESTUFFS

Hederich Volker, Cologne-Deutz, Gehrke Gunter, Cologne-Flittard, and Bein Hans-Samuel, Burscheid, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of abandoned application Ser. No. 550,894, May 18, 1966. This application Feb. 17, 1971, Ser. No. 116,254
Claims priority, application Germany, May 24, 1965, F 46,135
Int. Cl. C09b 1/52
U.S. Cl. 260—373 9 Claims

Anthraquinone dyestuffs useful in the dyeing of cellulose esters, polyamides, or polyester fibre materials containing from two to four auxochromes in the alpha position and an acyloxy group in the beta position, said acyloxy group being preferably a sulphonoxy group containing an aryl, alkyl, or dialkylamino substituent.

3,763,194

BIOLOGICALLY ACTIVE 17α-ETHYNYL-16,17-DIHYDROXY-13-ALKYLGONA-1,3,5(10)-TRIENES

Reinhardt P. Stein, Audubon, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed July 21, 1972, Ser. No. 274,011
Int. Cl. C07c 169/08
U.S. Cl. 260—397.5 2 Claims

13 - alkylgona-1,3,5(10),16-tetraene-3,17-diol, diacetate is converted by treatment with lead acetate to the corresponding 16-acetate-17-one compound which on treatment with ethynyl Grignard affords 13-alkyl-17α-ethynylgona 1,3,5(10)-triene-3,16β,17β-triol. Treatment of the tetraene starting material with organic peracid followed by boron trifluoride-etherate cleavage and treatment with ethynyl Grignard affords the corresponding 3,16α,17β-triol. The triol compounds of the invention exert antilipemic effects in warm blooded animals.

3,763,195

NOVEL 21-ACYLOXY-3α-HYDROXY-5α-PREGNONE-11,20-DIONES

Benjamin Davis, Chalfont St. Peter, Derek Roger Pearce, Bracknell, Martin Christopher Cook, Chalfont St. Peter, Niall Galbraith Weir and Christopher Earle Newall, London, Barry Edward Ayres, Amersham, Gordon Ian Gregory, Chalfont St. Peter, and Gordon Hanley Phillipps, Wembley, England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

No Drawing. Original application June 17, 1970, Ser. No. 47,163. Divided and this application Feb. 9, 1971, Ser. No. 114,036
Int. Cl. C07c 169/32
U.S. Cl. 260—397.45 7 Claims

This invention is concerned with improvements in or relating to pharmaceutical preparations having anaesthetic activity, and more particularly aqueous preparations suitable for intravenous injection.

3,763,196

17-ESTERS OF 6α,9α-DIFLUORO-21-DESOXYPREDNISOLONE

Rinaldo Gardi and Carate Brianza, Milan, Romano Vitali, Casatenovo, Como, and Giovanni Falconi, Milan, Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Nov. 14, 1972, Ser. No. 306,636
Claims priority, application Italy, Nov. 19, 1971, 31,368/71
Int. Cl. C07c 169/34
U.S. Cl. 260—397.45 4 Claims

The 17-propionate, 17-butyrate and 17-benzoate of 6α,9α-difluoro-21-desoxyprednisolone which can be prepared from the corresponding 17-esters of 6α,9α-difluoroprednisolone by reductive elimination of the hydroxy group at C_{21}, are useful as topical anti-inflammatory agents.

3,763,197

ORGANO-METALLIC COMPOUNDS

Michael R. Collier, Hurstpierpoint, England, Bernard M. Kingston, Radyr, near Cardiff, Wales, and Michael F. Lappert and Margaret M. Truelock, Brighton, England, assignors to National Research Development Corporation, London, England

No Drawing. Filed July 14, 1970, Ser. No. 54,866
Claims priority, application Great Britain, July 17, 1969, 36,021/69
Int. Cl. C07f 7/00
U.S. Cl. 260—429.3 35 Claims

Organo-metallic compounds of the general formula:

$$L_nM[CY_m(M'R^1R^2R^3)_{3-m}]_r$$

where

M is a transition metal of Group IV–A, V–A, VI–A, VII–A, VIII or I–B of the Periodic Table of the Elements;

M' is carbon, silicon, germanium, tin, or lead;

where M' is carbon, R^1, R^2, R^3 are alkyl or aryl groups and may be the same or different, and where M' is silicon, germanium, tin, or lead, R^1, R^2 and R^3 are alkyl, aryl, alkoxy, or aralkoxy groups or halogen or hydrogen atoms and may be the same or different;

m is 0, 1 or 2;

n is 0 to 4;
L_n is the sum of all other ligands (if any) to the transition metal, which ligands may be the same or different;
Y is hydrogen, or halogen, or an alkyl or aryl group, and when m is 2, the two groups Y may be the same or different;
r is 1 to 4 depending on the available valencies of the transistion metal.

The compounds are useful as catalysts for olefine polymerisation, isomerisation and oligomersation, and for hydrogenation, dehydrogenation, hydroformylation and hydrosilylation reactions.

3,763,198

AMINO SUBSTITUTED ORGANO TIN CARBOXYLATES AND THE PREPARATION THEREOF

William Tait Flannigan, Kilwinning, and Robert Muir Gibbon, West Kilbride, Scotland, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 24, 1971, Ser. No. 146,566
Claims priority, application Great Britain, June 1, 1970, 26,321/70
Int. Cl. C07f 7/22
U.S. Cl. 260—429.7 7 Claims

New amino organotin compounds suitable for use as catalysts for organopolysiloxane paper treating compositions, compositions containing these and treatment of, for example, paper therewith.

3,763,199

PROCESS FOR PREPARING ZINC 2-BENZAMIDOTHIOPHENATE

George Louis Mina, High Bridge, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 18, 1971, Ser. No. 200,206
Int. Cl. C07f 3/06
U.S. Cl. 260—429.9 9 Claims

An improved process for preparing zinc 2-benzamidothiophenate which involves the direct benzoylation of 2-aminothiophenol.

3,763,200

COMPLEXES OF MONOVALENT COPPER AND SILVER SALTS DERIVED FROM FLUOROCARBON SUBSTITUTED SULFONIC ACIDS

Martin B. Dines, Mountainside, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Sept. 20, 1971, Ser. No. 182,223
Int. Cl. C07f 1/10
U.S. Cl. 260—430 8 Claims

Complexes of monovalent copper and silver salts derived from fluorocarbon substituted sulfonic acids and characterized by the following formula:

$$[MSO_3R_f]_xL_y$$

wherein x is an integer of 1 or 2, y is an integer ranging from 1 to 4; R_f is a straight or branched fluorocarbon moiety containing from 1 to 10 carbon atoms; M is a monovalent metal selected from the group consisting of copper and silver; L is a ligand selected from the group consisting of C_2–C_{30} alkene; C_2–C_{30} alkene substituted with halogen; C_2–C_{30} alkyne; C_2–C_{30} alkyne substituted with halogen; C_6–C_{14} arene; C_6–C_{14} arene substituted with from 1–6 C_1–C_{12} alkyl groups; thiophene, furan, pyridine, or thiophene, furan and pyridine substituted with C_1–C_{12} alkyl; C_6–C_{14} arene substituted with halogen; C_1–C_{30} alkoxy, C_1–C_{30} carboxy; carbon monoxide, phosphine and phosphine substituted with C_1–C_{12} alkyl or C_6–C_{14} aryl and nitriles have been discovered to be excellent agents for separating mixtures of closely boiling compounds.

3,763,201

PRODUCTION OF ARSANILIC ACID

Hermann Hoffmann, 106 Kelly St., and Harry E. Green, 802 Kellogg St., both of Charles City, Iowa

No Drawing. Continuation-in-part of application Ser. No. 152,393, June 11, 1971. This application Oct. 12, 1971, Ser. No. 188,548
Int. Cl. C07f 9/74
U.S. Cl. 260—442 16 Claims

A process for increasing the arsanilic acid yield from the reaction of aniline and arsenic acid. The primary reaction is carried out under conventional conditions, and the normally discarded by-products of the primary reaction are hydrolyzed with acids at elevated temperatures, either in the crude primary reaction product mixture or after separation therefrom, to produce additional arsanilic acid. Di-(p-aminophenyl)-arsinic acid and tri-(p-aminophenyl)-arsineoxide are identified as two of the by-product compounds which are hydrolyzed. The arsanilic acid produced from the primary reaction and from the hydrolysis of by-products is recovered in a conventional manner.

3,763,202

FLAME RETARDANT ANTIMONY COMPOUNDS

Charles Carmen Cumbo and Paul C. Yates, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 30, 1970, Ser. No. 93,832
Int. Cl. C07f 9/90
U.S. Cl. 260—446 11 Claims

Esters of pentavalent antimony with aliphatic polyhydroxy compounds having vicinal hydroxyl groups, salts of the esters with zinc and stannous oxides and hydroxides, and mixed esters of trivalent and pentavalent antimony with aliphatic polyhydroxy compounds having vicinal hydroxyl groups, are effective flame retardants for organic polymers such as polyacrylonitrile. The esters and salts are soluble in solvents commonly used for processing the polymers, and hence can be conveniently incorporated into the polymers.

3,763,203

ROUTE TO ORGANO (TRIFLUOROMETHYL) MERCURY COMPOUNDS

Dietmar Seyferth, Lexington, and Steven P. Hopper, Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,730
Int. Cl. C07f 3/10, 3/12
U.S. Cl. 260—431 8 Claims

Organo (trifluoromethyl) mercury compounds are formed by reacting a trifluoromethylmercuric salt and a diorganomercury compound. Organo (trifluoromethyl) mercury compounds serve as difluorocarbene donors for the preparation of gem difluorocyclopropanes.

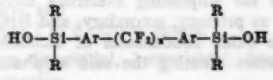
3,763,204

POLYMERIZABLE DISILANOLS HAVING IN-CHAIN PERFLUOROALKYL GROUPS

William J. Patterson, Madison, and Donald E. Morris, Huntsville, Ala., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

No Drawing. Original application Dec. 22, 1970, Ser. No. 100,774, now Patent No. 3,666,718. Divided and this application Jan. 20, 1972, Ser. No. 219,590
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 D 4 Claims

Disilanols having the formula



where R is a monovalent hydrocarbon radical, Ar is an arylene group and x is from 2 to 8 and a process for preparing the same are discussed. The disilanols, when reacted with a diaminosilane and cured, produce polymeric material resistant to hydrocarbon fuels and stable at elevated temperatures.

3,763,205

METHANOL PROCESS WITH RECYCLE

Ralph V. Green, Charleston, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 10, 1971, Ser. No. 141,615

Int. Cl. C07c *29/16*

U.S. Cl. 260—449.5 **3 Claims**

Methanol is made by a process that involves feeding natural gas, steam, a recycle stream and optionally carbon dioxide, to a single bed type reformer. The recycle stream is the unconverted gas from the methanol converter. The reformer output is cooled, compressed and converted to methanol in a converter operating at 450–750° F. and 500 to 1000 p.s.i.g. The converter output is cooled to separate the methanol from the recycle, i.e., the unconverted gases.

3,763,206

4-HYDROXY-2,6-DI-TERT.ALKYLPHENYL-CYANATES

Heimo Brunetti, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,591

Claims priority, application Switzerland, Nov. 9, 1970, 16,549/70

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 AR **3 Claims**

New 4-hydroxy - 2,6 - di - tert.alkylphenylcyanates are intermediates for the synthesis of stabilizers. They are prepared by reacting a 2,6-di-tert.alkylhydroquinon with bromo- or chlorocyanine.

3,763,207

PERFLUOROCYCLIC CARBINOL SULFATE SALTS

Dewey G. Holland, Allentown, Pa., and John H. Polevy, Attleboro, Mass., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Filed Nov. 7, 1969, Ser. No. 874,977

Int. Cl. C07c *141/02*

U.S. Cl. 260—458 **8 Claims**

Compounds of the invention may be prepared by reacting α,α-dihydro-perfluorocyclohexane carbinol compositions with sulfonating agents and reacting the resulting compositions with alkali metal containing compositions to provide compounds having highly desirable physical properties when employed for a variety of uses, e.g. reducing surface tension.

3,763,208

USE OF AMINE COMPOUNDS IN THE SULFATION OF ALCOHOLS

Austen Edgar Sowerby, Distington, England, assignor to Electric Reduction Company of Canada Ltd., Toronto, Ontario, Canada

Original application Feb. 26, 1968, Ser. No. 708,191. Divided and this application Oct. 19, 1970, Ser. No. 82,099

The portion of the term of the patent subsequent to Dec. 29, 1987, has been disclaimed

Int. Cl. C07c *141/10*

U.S. Cl. 260—458 **18 Claims**

A process for sulphating materials having free OH groups such as primary, secondary, and tertiary alcohols and alkylene oxide condensates of alcohols or phenols which comprises reacting the said sulphatable material with sulphur trioxide in the presence of a further product obtained by the action of an amino compound on the product obtained from the sulphation reaction. At most only a small excess of sulphur trioxide is employed and mild conditions are maintained throughout the reaction.

3,763,209

2,4-DICYANO-6-NITRO-BENZENE AMINES

Klaus Wagner, Cologne-Buchheim, Ernst Roos, Cologne-Flittard, Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 24, 1969, Ser. No. 879,525

Claims priority, application Germany, Nov. 29, 1968, P 18 11 717.4

Int. Cl. C07c *121/78*

U.S. Cl. 260—465 E **9 Claims**

2,4-dicyano-6-nitro-benzene amines and ethers; i.e., 2,4-dicyano-6-nitro-N-(optionally alkyl, hydroxyalkyl, alkoxyalkyl, alkenyl, cycloalkyl, phenyl-alkyl and phenyl substituted)-N-(optionally alkyl and alkenyl substituted)-anilines, 2,4 - dicyano-6-nitro-phenyl-substituted-morpholine, -pyrrolidine and -piperidine, and 2,4-dicyano-6-nitro-phenyl-alkyl ethers, which possess herbicidal properties, and which may be produced by conventional methods.

3,763,210

ARLOXY AND ARYLTHIO NITRITE COMPOSITIONS

Darrell R. Heath and Joseph G. Wirth, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed Jan. 20, 1971, Ser. No. 108,150

Int. Cl. C07c *121/60, 121/74*

U.S. Cl. 260—465 F **6 Claims**

Aryloxy and arylthio compositions are prepared from the reaction of a nitro- or fluorobenzene containing a carboxy group or a cyano group directly attached to the benzene nucleus with an alkali-metal salt of monovalent or divalent aromatic radicals in the presence of a dipolar aprotic solvent. The invention also embraces novel difunctional compounds prepared in accordance with the above-described process.

3,763,211

AMINOPHENOXY BENZONITRILES

Darrell R. Heath and Joseph G. Wirth, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed Jan. 20, 1971, Ser. No. 108,153

Int. Cl. C07c *121/78*

U.S. Cl. 260—465 E **5 Claims**

Aminophenoxy benzonitriles are prepared from the reaction of a dinitro-, dichloro- or chloronitro-substituted benzonitrile with an alkali-metal salt of an aminophenol in the presence of a dipolar aprotic solvent. The invention also includes novel diaminophenoxy benzonitriles or benzoic acids prepared in accordance with the above-described process.

3,763,212

HYDROLYSIS OF ALKYLALKENYLDICHLOROSILANE

Harry R. McEntee, Waterford, and John S. Razzano, Troy, N.Y., assignors to General Electric Company

No Drawing. Filed Feb. 4, 1972, Ser. No. 223,693

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 E **10 Claims**

Process for preparing cyclic sym-polyalkylpolyalkenylpolysiloxane such as 2,4,6,8-tetramethyl-2,4,6,8-tetravinylcyclotetrasiloxane by hydrolysis of alkylalkenyldichlorosilane in a medium containing water and certain organic liquids.

3,763,213

INTRODUCTION OF ORGANIC GROUPS INTO ETHYLENICALLY UNSATURATED CARBOXYLIC NITRILES USING A GROUP VIII METAL SALT

Richard F. Heck, 2304 Riddle Ave., Wilmington, Del. 19806

No Drawing. Original application Dec. 8, 1969, Ser. No. 883,288. Divided and this application Nov. 10, 1971, Ser. No. 197,541

Int. Cl. C07c *121/02*

U.S. Cl. 260—465 K 6 Claims

The process involves the introduction of an organic group into an ethylenically unsaturated carboxylic acid nitrile. As an example, a mixture of phenylmercuric chloride, lithium palladium chloride and acrylonitrile is formed in acetonitrile as solvent. This results in the formation of an unstable adduct between the acrylonitrile and phenylpalladium chloride. Decomposition of the adduct by maintaining it above its decomposition temperature provides cinnamonitrile as the product.

3,763,214

THERAPEUTICALLY ACTIVE COMPOUNDS

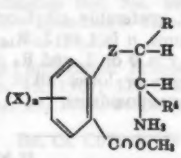
John Krapcho, Somerset, and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Application May 28, 1970, Ser. No. 50,003, which is a division of application Ser. No. 533,264, Mar. 10, 1966. Divided and this application Aug. 7, 1972, Ser. No. 278,504

Int. Cl. C07c *149/40*

U.S. Cl. 260—470 2 Claims

Disclosed herein are compounds having the formula



wherein Z is oxygen or sulfur; X is hydrogen, lower alkyl, lower alkoxy, amino, dialkylamino, halo, lower alkylthio, hydroxy, cyano, nitro or trifluoromethyl; R is aryl; R^4 is hydrogen or lower alkyl; and *n* is 1 to 4; and esters thereof. These compounds are intermediates for compounds which have central nervous system modifying activity.

3,763,215

THERAPEUTICALLY ACTIVE COMPOUNDS

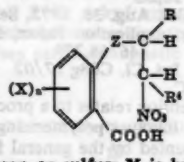
John Krapcho, Somerset, and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Application May 28, 1970, Ser. No. 50,003, which is a division of application Ser. No. 533,264, Mar. 10, 1966. Divided and this application Aug. 7, 1972, Ser. No. 278,505

Int. Cl. C07c *149/40*

U.S. Cl. 260—470 3 Claims

Disclosed herein are compounds having the formula



wherein Z is oxygen or sulfur; X is hydrogen, lower alkyl, lower alkoxy, amino, dialkylamino, halo, lower alkylthio, hydroxy, cyano, nitro or trifluoromethyl; R is aryl; R^4 is hydrogen or lower alkyl; and *n* is 1 to 4; and esters thereof. These compounds are intermediates for compounds which have central nervous system modifying activity.

3,763,216

N-DISUBSTITUTED DERIVATIVES OF α-AMINO ACIDS

Francois Robert Bertrand, Geneva, Switzerland, assignor to Medial de Toledo & Cie, Geneva, Switzerland

No Drawing. Filed Apr. 3, 1968, Ser. No. 718,361

Claims priority, application France, Apr. 11, 1967, 102,195

Int. Cl. C07c *103/22*

U.S. Cl. 260—471 A 17 Claims

This disclosure concerns disubstituted α-amino acids which have both a phenyl and a benzoyl substituent on the nitrogen atom. These compounds exert anti-inflammatory and analgesic effects in man, as evidenced by clinical evaluation according to standard test procedures.

3,763,217

PREPARATION OF CARBAMATES

William F. Brill, Skillman, N.J., assignor to Halcon International, Inc.

No Drawing. Filed Dec. 3, 1970, Ser. No. 94,969

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C 8 Claims

N-substituted carbamates are prepared by reacting an organic carbonate with a primary or secondary amine in the presence of a Lewis acid.

3,763,218

ESTERS OF PHENYLALANINE

Ado Kaiser, Neu-Frenkendorf, Switzerland, and Hermann Bretschneider and Kraft Hohenlohe-Oehringen, Innsbruck, Austria, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Apr. 28, 1971, Ser. No. 139,297

Claims priority, application Switzerland, May 6, 1970, 6,806/70

Int. Cl. C07c *103/30*

U.S. Cl. 260—471 A 3 Claims

The compound α-amino-3-phenyl propionic acid and ethane derivatives wherein the phenyl ring is substituted with a formyl group useful as a hypotensive and appetite inhibiting agent.

3,763,219

1-(2'-CYCLOHEXYLIDENIMINOPHENYL)-3-ALKOXYCARBONYL-2-THIOUREAS

Arno Widdig, Blecher, Ferdinand Grewe, Burscheid, and Hans Scheinpflug and Paul-Ernst Frohberger, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

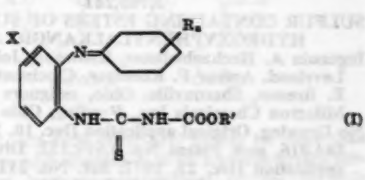
No Drawing. Filed Mar. 21, 1972, Ser. No. 236,586

Claims priority, application Germany, Mar. 27, 1971, P 21 14 882.3

Int. Cl. C07c *157/12*

U.S. Cl. 260—470 3 Claims

1-(2'-cyclohexylideniminophenyl) - 3 - alkoxycarbonyl-2-thioureas of the general formula



(I)

in which

X is hydrogen or alkyl with 1 to 6 carbon atoms,

n is 0, 1, 2 or 3,

R is lower alkyl, and

R' is alkyl with 1 to 6 carbon atoms,

which possess fungicidal, bactericidal, insecticidal and acaricidal properties.

3,763,220
SULFUR CONTAINING ESTERS OF SUBSTITUTED HYDROXYPHENYLALKANOIC ACIDS

Ingenuin A. Hechenbleikner, Kentwood, John F. Hussar, Loveland, Arthur F. Koeniger, Cincinnati, and Robert E. Bresser, Sharonville, Ohio, assignors to Cincinnati Milacron Chemicals Inc., Reading, Ohio

No Drawing. Original application Dec. 10, 1969, Ser. No. 884,016, now Patent No. 3,699,152. Divided and this application Dec. 14, 1971, Ser. No. 207,960
Int. Cl. C07c 65/04
U.S. Cl. 260—473 S 5 Claims

Compounds are prepared having one of the following formulae:

(a) $HOR_1CH_2S(CH_2)_nCOOR_4$

(b) $HOR_1(CH)_yCH_2COOR_1$ (with R_{14} on the CH)

(c) $HOR_1C_mH_{2m-1}(S(CH_2)_nCOOR_4)_2$

(d) $(HOR_1CH_2)_2C(COOR_4)_2$

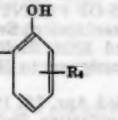
(e) $HOR_1CH_2O(CH_2)_nCOOR_2$

(f) $HOR_1CH_2OCH_2CH_2OOCCH_2CH_2S(CH_2)_nCOOR_3$

(g) $HOR_1CH_2CH(COOR_4)_2$

(h) $HOR_1CH{=}C(COOR_3)(COOR_3)$

where HOR_1 is



where R_5 and R_6 are hydrogen, alkyl, cycloalkyl, aryl or aralkyl, the total carbon atoms in R_5 and R_6 is between 4 and 36 carbon atoms, is preferably not over 12 carbon atoms and R_6 is preferably in the ortho position, R_2 is

$-CH_2(C_nH_{2n})S(C_nH_{2n-1})COOR_3$,

$CH_2S(CH_2)_nCOOR_3$

$CH_3CHS(CH_2)_nCOOR_3$,

or

$-CH_2C(CH_2OCH_2CH_2CH_2S(CH_2)_nCOOR_4)_3$ (with C_nH_{2n+1})

R_3 is hydrocarbyl, preferably alkyl or alkenyl, e.g. of 1 to 18 carbon atoms, n is 1 or 2, R_{14} is H or $COOR_2$, m is 1, 2, 3 or 4, y is 0 or 1, and R_4 is either R_2 or R_3 and R_{15} is hydrogen or lower alkyl. The above compounds are useful as antioxidants.

3,763,221
SULFUR CONTAINING ESTERS OF SUBSTITUTED HYDROXYPHENYLALKANOIC ACIDS

Ingenuin A. Hechenbleikner, Kenwood, John F. Hussar, Loveland, Arthur F. Koeniger, Cincinnati, and Robert E. Bresser, Sharonville, Ohio, assignors to Cincinnati Milacron Chemicals Inc., Reading, Ohio

No Drawing. Original application Dec. 10, 1969, Ser. No. 884,016, now Patent No. 3,699,152. Divided and this application Dec. 23, 1971, Ser. No. 211,725
Int. Cl. C07c 65/04
U.S. Cl. 260—473 S 4 Claims

Compounds are prepared having one of the following formulae:

(a) $HOR_1CH_2S(CH_2)_nCOOR_4$

(b) $HOR_1(CH)_yCH_2COOR_1$ (with R_{14} on the CH)

(c) $HOR_1C_mH_{2m-1}(S(CH_2)_nCOOR_4)_2$

(d) $(HOR_1CH_2)_2C(COOR_4)_2$

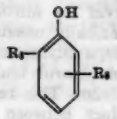
(e) $HOR_1CH_2O(CH_2)_nCOOR_2$

(f) $HOR_1CH_2OCH_2CH_2OOCCH_2CH_2S(CH_2)_nCOOR_3$

(g) $HOR_1CH_2CH(COOR_4)_2$

(h) $HOR_1CH{=}C(COOR_3)(COOR_3)$

where HOR_1 is



where R_5 and R_6 are hydrogen, alkyl, cycloalkyl, aryl or aralkyl, the total carbon atoms in R_5 and R_6 is between 4 and 36 carbon atoms, is preferably not over 12 carbon atoms and R_6 is preferably in the ortho position, R_2 is

$-CH_2(C_nH_{2n})S(C_nH_{2n-1})COOR_3$,

$CH_2S(CH_2)_nCOOR_3$

$CH_3CHS(CH_2)_nCOOR_3$, or

$-CH_2C(CH_2OCH_2CH_2CH_2S(CH_2)_nCOOR_4)_3$ (with C_nH_{2n+1})

R_3 is hydrocarbyl, preferably alkyl or alkenyl, e.g. of 1 to 18 carbon atoms, n is 1 or 2, R_{14} is H or $COOR_2$, m is 1, 2, 3 or 4, y is 0 or 1, and R_4 is either R_2 or R_3 and R_{15} is hydrogen or lower alkyl. The above compounds are useful as antioxidants.

3,763,222
ESTERS OF PHENYL INDAN

Elihu J. Aronoff, Framingham, and Kewal Singh Dhami, Shrewsbury, Mass., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

No Drawing. Filed Apr. 11, 1972, Ser. No. 243,052
Int. Cl. C07c 69/76
U.S. Cl. 260—475 FR 5 Claims

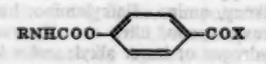
The dicarboxyallyl, dicarboxymethallyl and mixed carboxyallyl-carboxymethallyl esters of phenyl indan are novel compositions of matter. These compounds are useful as crosslinking and plasticizing agents for polymeric compositions.

3,763,223
PROCESS FOR PRODUCING POLYESTERS FROM CARBAMYLOXY BENZOIC ACID HALIDES

Takeshi Yamahara, Kobe, and Shinji Nakamura, Ibaraki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Aug. 30, 1972, Ser. No. 284,987
Claims priority, application Japan, Sept. 4, 1971, 46/68,279
Int. Cl. C08g 17/02
U.S. Cl. 260—47 C 3 Claims

The present invention relates to a process for producing a polyester, which involves polymerizing by condensation a monomer represented by the general formula:



wherein R is a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, an aralkyl group having 7 to 10 car-

bon atoms or an aryl group having 6 to 10 carbon atoms and X is a halogen atom, without using any catalyst under heating. Also provided herein are polyesters produced by the aforementioned process. The final products exhibit good thermostability characteristics.

3,763,224

PHOTOPOLYMERIZABLE COMPOSITIONS

Gerald I. Nass, West New York, and Gerhard E. Sprenger, Carlstadt, N.J., assignors to Sun Chemical Corporation, New York, N.Y.

No Drawing. Original application Apr. 4, 1969, Ser. No. 813,756, now Patent No. 3,650,885. Divided and this application Jan. 11, 1971, Ser. No. 105,631

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 H 5 Claims

Ethylenically unsaturated esters of halogenated ring compounds are capable of photocuring in the absence of a photoinitiator.

3,763,225

PERFLUOROALIPHATIC SUBSTITUTED AMINES

Louis Foulletier, Oullins, and Jean-Pierre Lalu, La Mulatiere, France, assignors to Produits Chimiques Ugine Kuhlmann

No Drawing. Continuation of application Ser. No. 819,479, Apr. 25, 1969, which is a continuation-in-part of application Ser. No. 694,090, Dec. 28, 1967, both now abandoned. This application Apr. 29, 1971, Ser. No. 138,820

Claims priority, application France, Jan. 2, 1967, 89,676; Sept. 15, 1967, 121,188; Nov. 7, 1967, 127,254; Apr. 29, 1968, 149,848; Aug. 20, 1970, 7030550

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 H 21 Claims

This invention comprises perfluoroaliphatic substituted amino compounds of the formula

$$C_nF_{2n+1}(CR^1R^2)_mN-(CHR)_q-OCOCR^4=CH_2 \quad (I)$$
$$\qquad\qquad\qquad\qquad\quad R^3$$

wherein n is an integer from 1 to about 20, m is 2 or 4, q is an integer from 1 to 10, R^1 and R^2 each is a hydrogen atom or a lower alkyl containing 1 to 3 carbon atoms, and R^3 an alkyl radical containing 1 to 20 carbon atoms, an alkenyl containing 3 to 10 carbon atoms, a cycloparaffin radical containing 3 to 12 carbon atoms, a cycloalkenyl radical containing 5 to 12 carbon atoms, an N or O ring substituted cycloalkenyl radical containing 5 to 12 carbon atoms, an aryl, the radical $C_nF_{2n+1}—(CR^1R^2)_m—$ or the radical $—COCR^4=CH_2$, R is a hydrogen atom or a lower alkyl containing 1 to 3 carbon atoms, and q is an integer from 1 to 10 and R^4 is a hydrogen atom or a methyl group and the method for preparing the same. This invention also comprises perfluoroaliphatic amino compounds of the formula

$$C_{n-1}F_{2n-1}-CF=CR^1-CHR^1-N-(CHR)_q-OCOCR^4=CH_2 \quad (II)$$
$$\qquad\qquad\qquad\qquad\qquad\quad R^3$$

and mixtures of products of Formula II with compounds of the formula

$$C_nF_{2n+1}(CHR^1)_2N-(CHR)_q-OCOCR^4=CH_2 \quad (III)$$
$$\qquad\qquad\qquad\qquad\quad R^3$$

3,763,226

3,5-SUBSTITUTED 2,4,6-TRIIODOBENZOIC ACIDS, ESTERS AND SALTS THEREOF

Bjorn Gustav-Adolf Ingelman, Uppsala, Sweden, assignor to Pharmacia AB, Uppsala, Sweden

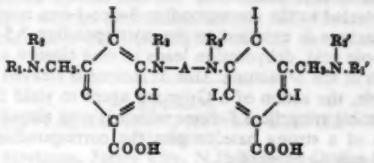
No Drawing. Original application Dec. 26, 1968, Ser. No. 787,282, now Patent No. 3,632,736, dated Jan. 4, 1972. Divided and this application July 21, 1970, Ser. No. 56,952

Claims priority, application Sweden, Dec. 28, 1967, 17,896/67

Int. Cl. C07c *103/46*

U.S. Cl. 260—490 20 Claims

Compounds of the formula:



wherein R_1 and R_1' are each hydrogen or lower alkyl having no more than 5 carbon atoms, R_3; R_3'; R_5; and R_5' are each lower acyl having no more than 5 carbon atoms, and A is an alkylene group substituted by one or more substituents of the formula —O—R_4, wherein R_4 is hydrogen or lower alkyl or acyl having no more than 5 carbon atoms; the alkylene group containing 3–20 carbon atoms and being optionally broken by one or more oxygen bridges, or physiologically acceptable salts thereof are provided. Such compounds are especially suitable to be used for X-ray visualization of body cavities.

3,763,227

NOVEL 3,5-SUBSTITUTED 2,4,6-TRIIODOBENZOIC ACIDS AND SALTS THEREOF

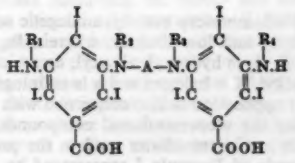
Björn Gustav-Adolf Ingelman, Uppsala, Sweden, assignor to Pharmacia AB, Uppsala, Sweden

No Drawing. Original application Dec. 26, 1968, Ser. No. 787,224, now Patent No. 3,632,737. Divided and this application July 21, 1970, Ser. No. 56,980

Int. Cl. C07c *103/32*

U.S. Cl. 260—490 22 Claims

Compounds of the formula:



wherein R_1–R_4 are each lower acyl having no more than 5 carbon atoms and wherein A is an alkylene group substituted by at least one substituent of the formula —O—R, wherein R is a member selected from the group consisting of hydrogen, lower alkyl and acyl having no more than 5 carbon atoms, said alkylene group containing 3–20 carbon atoms, or physiologically acceptable salts thereof are provided. Such compounds are especially suitable to be used for X-ray visualization of body cavities.

3,763,228

OXIDATION OF 3-OXO-4-OXA-5β-CHOLESTANE

George R. Pettit, Paradise Valley, Ariz., and Jerry R. Dias, Santa Clara, Calif., assignors to Research Corporation, New York, N.Y.

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,141

Int. Cl. C07c 51/24

U.S. Cl. 260—514 G 3 Claims

There is provided a novel method of preparing steroids having the cyclopentanophenanthrene nucleus, in particular those possessing the valuable 3-oxo-4-ene groupings, from tetracyclic triterpenes such as lanosterol.

The method comprises converting lanosterol to the corresponding 3β-hydroxy-5α-lanostane which is then subjected to A-ring contraction to give the known 3-oxo-A-nor-14α-methyl cholestane. The five membered "A" ring is converted to the corresponding 3-oxo-4-oxa compound. This lactone is oxidized to the corresponding 3,5-seco-5-oxo-3-oic acid, dehydration leads to ring closure and formation of the Δ^5 lactone. This Δ^5 lactone is cleaved by, for example, the action of a Grignard agent to yield the corresponding tricyclic 3,5-dione which is ring closed by the action of a strong base to give the corresponding valuable 3-oxo-4-ene steroid.

The method has great and surprising flexibility in being substantially unaffected by substitution patterns in the B, C or D rings of the nucleus. The method thus presents lanosterol as a cheap and readily available raw material for most known steroids and is thus a desirable alternative to the presently used diosgenin for this purpose.

3,763,229

INDAN-1-CARBOXYLIC ACID DERIVATIVES

Shunsaku Noguchi, Shoji Kishimoto, and Mikihiko Obayashi, Osaka, and Isao Minamida and Kiyohisa Kawai, Kyoto, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

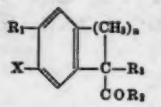
No Drawing. Filed May 7, 1970, Ser. No. 35,579

Claims priority, application Japan, May 14, 1969, 44/37,199; Dec. 25, 1969, 44/104,576; Dec. 26, 1969, 44/254; Apr. 18, 1970, 45/33,194, 45/33,195

Int. Cl. C07c 61/20, 103/22

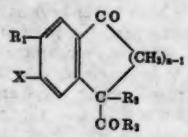
U.S. Cl. 260—515 A 3 Claims

The present invention provides for compounds of the formula



(I)

having anti-inflammatory activity, analegetic activity, antipyretic activity and low toxicity, wherein R_1 in the formula is alkyl, R_2 is hydroxyl, alkoxyl, or amino, R_3 is hydrogen or alkyl, X is halogen and n is an integer of 2 or 3. The present application is also concerned with the process of producing the aforementioned compounds. Also provided herein are intermediates used in the production of the compounds of Formula I represented by the general formula



(II)

wherein all of the symbols have the same meaning as above.

3,763,230

SULFONIUM COMPOUNDS OF α-HYDROXY-γ-ALKYLMERCAPTOBUTYRIC ACID

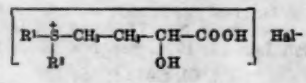
Hans Wagner, Konstanz, and Herbert Tanner, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,775

Int. Cl. C07c 59/04

U.S. Cl. 260—535 R 9 Claims

Compounds of the General Formula I



(I)

in which R^1 is an alkyl radical having 1 to 12 carbon atoms, an aralkyl or an aryl radical, R^2 is an alkyl radical having 1 to 4 carbon atoms and Hal is a halogen atom. A process for preparing those compounds is provided. The compounds are biologically active and constitute valuable drugs.

3,763,231

DETERGENT BUILDER COMPOSITION

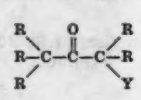
Herman A. Bruson, Woodbridge, Conn., and Henry Gould, Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.

No Drawing. Original application Aug. 6, 1971, Ser. No. 169,870. Divided and this application Aug. 21, 1972, Ser. No. 282,428

Int. Cl. C07c 55/24

U.S. Cl. 260—537 R 3 Claims

The present invention relates to a detergent builder composition having the formula:



wherein R is $-CH_2-CH_2-COOX$, X being a member selected from the class consisting of hydrogen, alkali metals, ammonium, substituted ammonium, and Y is selected from the class consisting of hydrogen and

$$-CH_2CH_2-COOX$$

X being selected from the class consisting of hydrogen, alkali metals, ammonium, substituted ammonium and mixtures thereof.

3,763,232

α-AMINOALKYL-4-HYDROXY-3-UREIDOBENZYL ALCOHOLS

Carl Kaiser, Haddon Heights, N.J., and Stephen T. Ross, Berwyn, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 12,151, Feb. 17, 1970. This application Jan. 11, 1971, Ser. No. 105,698

Int. Cl. C07c 127/18

U.S. Cl. 260—553 A 14 Claims

α-Aminoalkyl-4-hydroxy-3-ureidobenzyl alcohols having β-adrenergic stimulant activity, particularly as selective bronchodilators, are prepared generally from 3-amino-4-benzyloxyphenones by, for example, conversion to an isocyanate, reaction with ammonia or a monosubstituted alkyl or aryl amine to give 3-ureidophenones,

bromination of these phenones and treatment of the resulting α-bromo derivatives with an N-benzyl secondary amine, followed by catalytic hydrogenation to remove the benzyl groups and reduce the ketone moiety.

3,763,233

7-SUBSTITUTED-HEXAHYDRO PLEIADENES

William J. Houlihan, Baden, Austria, and Jeffrey Nadelson, Parsippany, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Aug. 17, 1971, Ser. No. 172,587

Int. Cl. C07c *87/34, 103/22, 127/14*

U.S. Cl. 260—553 R **4 Claims**

Hexahydro pleiadenes substituted at the seven position, e.g., 1,2,3,7,12,12a - hexahydro - 7 - carboxamido pleiadene, and dibenzoheptalenes substituted at the 8-position, e.g., 1,2,3,4 - tetrahydro - 8 - (1 - methyl - 4 - piperidyl)-8H-dibenzo[b,ef]heptalene, prepared from corresponding 7-substituted-hexahydro pleiadenes and 8-substituted dibenzoheptalenes, are useful as anti-convulsants.

3,763,234

PREPARATION OF AMIDES

William F. Brill, Skillman, N.J., assignor to Halcon International, Inc.

No Drawing. Filed Dec. 3, 1970, Ser. No. 94,970

Int. Cl. C07c *103/30, 103/31, 103/76*

U.S. Cl. 260—558 P **8 Claims**

N-substituted amides are prepared by reacting an ester of a carboxylic acid with a primary or secondary amine in the presence of a Lewis acid.

3,763,235

SELECTIVE HYDROLYSIS

Jack Newcombe, Freehold, N.J., Jesse R. Motes, Sulfur, La., and James E. Kmiecik, Houston, Tex., assignors to Cities Service Company, New York, N.Y.

No Drawing. Filed July 30, 1971, Ser. No. 167,806

Int. Cl. C07c *103/10, 103/19, 103/20*

U.S. Cl. 260—558 A **8 Claims**

An amide is prepared by the transition metal-catalyzed selective hydrolysis of the corresponding nitrile in a carboxylic acid solvent. The catalyst is a cupric, nickelous, or mercuric salt, preferably a salt in which the anion is the conjugate base of the carboxylic acid. According to a preferred embodiment of the invention, the nitrile is an aromatic nitrile, e.g., terephthalonitrile.

3,763,236

PROCESS FOR PRODUCING N-ALKENYL-ACETAMIDES

Herbert Eck, Joseph Heckmaier, and Hellmuth Spes, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

No Drawing. Filed June 22, 1970, Ser. No. 48,544

Claims priority, application Germany, June 27, 1969, P 19 32 709.4

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 R **2 Claims**

A process for producing N-alkenyl-acetamides of the general formula

$$R-N(-CO-CH_3)-CR'=CR''R'''$$

where

R=unbranched or branched alkyl residue with 1–8 C atoms, phenyl residue,

R′=H, CH_3, C_2H_5

R″=H, CH_3, C_2H_5

R‴=H, CH_3, C_2H_5, where R′ and R‴ can also be joined into a cyclohexyl ring,

which comprises reacting an azomethine of the general structure R—N=CR′—CHR″R‴, where the residues R, R′, R″ and R‴ have the meaning stated above, with acetic acid anhydride at a temperature of —30 to 20° C., and with a tertiary amine in a quantity of 0.1 to 0.5 mol, referred to 1 mol azomethine and 1 mol acetic acid anhydride, and treating the reaction mixture after the reaction is completed with a quantity of ketene that is molar to the created acetic acid, and separating the created N-alkenyl-acetamide from the reaction mixture.

3,763,237

SUBSTITUTED HALOPHENOXYAMIDINE ACETALS

Edward R. Freiter, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 11, 1972, Ser. No. 243,076

Int. Cl. C07c *123/00*

U.S. Cl. 260—564 R **3 Claims**

Halophenoxyamidine acetal compounds such as 2-(3, 4-dichlorophenoxy) - N - (formylmethyl)acetamidine dimethylacetal and their pharmaceutically-acceptable salts are prepared by the reaction of a substituted phenoxyacetimidate with an aminoacetaldehyde dialkylacetal. The compounds have pharmacological activity as antidepressants.

3,763,238

N-(PENTACHLOROBIPHENYL) ETHYLENE DIAMINE

John J. Merianos, Jersey City, N.J., Edward Griffin Shay, Suffern, N.Y., and Philip Adams, Murray Hill, and Alfonso N. Petrocci, Glen Rock, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Original application Dec. 9, 1969, Ser. No. 883,636, now Patent No. 3,663,620, dated May 10, 1972. Divided and this application Mar. 15, 1972, Ser. No. 234,987

Int. Cl. C07c *91/16*

U.S. Cl. 260—570.5 P **1 Claim**

Microbiocidal ammonia and amino substituted halogenated biphenyls, as well as the nitrogen derivatives thereof such as quaternary ammonium compounds, amine oxides, imidazolines, amides, enamines, ampholytes, and the like.

The ammonia and amino halobiphenyls are prepared by reacting the ammonia or the amine and the halobiphenyl reactants in such a manner that the ratio of amine to halobiphenyl is preferably limited to between two and five mols of amine to each mol of halobiphenyl.

3,763,239

PURIFICATION OF SECONDARY ALKYL PRIMARY MONOAMINES

William Smolin, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Feb. 9, 1971, Ser. No. 114,057

Int. Cl. C07c *85/10, 85/16*

U.S. Cl. 260—583 N **4 Claims**

A process for purifying secondary alkyl primary monoamines by extracting the diamine impurities therefrom which comprises contacting the mono- and diamine mix with aqueous mineral acid containing, if desired, a dissolved inorganic salt having the identical anion as the mineral acid, thereby forming a substantially diamine-free organic amine phase and an aqueous phase; separating said phases; neutralizing said phases to isolate a substantially pure monoamine product, recovering said monoamine product as well as a substantially pure diamine concentrate.

3,763,240

(1,2-DICYCLOHEXENYL)-ETHYLENE KETONES

Paul W. Solomon, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Continuation-in-part of application Ser. No. 509,624, Nov. 24, 1965. This application Mar. 18, 1968, Ser. No. 714,070

Int. Cl. C07c *49/54*

U.S. Cl. 260—586 R **4 Claims**

Bicyclic triolefins are converted to peroxides and ketones.

3,763,241
PRODUCTION OF ORGANIC HALIDES AND TERTIARY PHOSPHINE SULFIDES
Michael J. Dagani, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
No Drawing. Original application Apr. 9, 1969, Ser. No. 815,281, now Patent No. 3,624,159. Divided and this application Sept. 9, 1971, Ser. No. 179,165
Int. Cl. C07f 9/02
U.S. Cl. 260—606.5 P 8 Claims

Organic halides and tertiary phosphine sulfides are coproduced by heating a thiol (e.g., alkane monothiol, alkane dithiol) with a tertiary phosphine in admixture with a carbon tetrahalide to a suitably elevated temperature.

3,763,242
METHOD OF MAKING POLYFUNCTIONAL COMPOUNDS
Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 77,027, Dec. 20, 1960, which is a continuation-in-part of abandoned application Ser. No. 41,805, July 11, 1960. This application May 27, 1964, Ser. No. 370,663
Int. Cl. C07c 147/02
U.S. Cl. 260—607 A 3 Claims

A process for reacting 2,2'-sulfonyldiethanol and n-butanol at an elevated temperature and in the presence of NaOH to produce bis(n-butoxy-ethyl) sulfone is disclosed.

3,763,243
PROCESS FOR MAKING 1,4-BIS(HALOPHENOXY)-2,3-DIHALO-2-BUTENES
Gary A. Ungefug, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Oct. 29, 1970, Ser. No. 85,222
Int. Cl. C07c 43/20, 41/00
U.S. Cl. 260—613 R 2 Claims

Methyl isobutyl ketone is an excellent solvent for the preparation of 1,4-bis(halophenoxy)-2,3-dihalo-2-butene from the reaction of the corresponding phenol and 1,2,3,4-tetrahalo-2-butene in the presence of base.

3,763,244
PROCESS FOR PRODUCING A C_6–C_{16} NORMAL ALPHA-OLEFIN OLIGOMER HAVING A POUR POINT BELOW ABOUT −50° F.
Ronald L. Shubkin, Oak Park, Mich., assignor to Ethyl Corporation, Richmond, Va.
No Drawing. Filed Nov. 3, 1971, Ser. No. 195,441
Int. Cl. C07c 9/00, 5/02
U.S. Cl. 260—676 R 15 Claims

Oligomers of normal-C_{6-16} alpha-olefins useful as lubricants can be made by reacting C_{6-16} normal-alpha-olefins or mixture thereof at a temperature of from about 10–60° C. using a water promoted boron trifluoride catalyst in which boron trifluoride is used in molar excess of the water. Preferably, additional boron trifluoride is injected into the reaction liquid phase during the course of the oligomerization. Stability of the resultant product is improved by catalytic hydrogenation. The products have a low pour point and high viscosity index.

3,763,245
ALLYLIC TERPENIC ALCOHOL PRODUCTION
Bernard Thomas Dudley Sully, Ewell, Surrey, England, assignor to Bush Boake Allen Limited, London, England
No Drawing. Filed Apr. 30, 1969, Ser. No. 820,641
Claims priority, application Great Britain, May 17, 1968, 23,647/68
Int. Cl. C07c 33/02
U.S. Cl. 260—631.5 20 Claims

C_{10} allylic terpenic halides are converted to the corresponding C_{10} allylic terpenic alcohols by direct aqueous hydrolysis in an aqueous hydrotropic solution of a benzene or alkylbenzene sulphonate salt wherein each of any alkyl groups present does not contain more than 4 carbon atoms, preferably sodium xylene sulphonate. By-product formation may thereby be minimised.

3,763,246
PROCESS FOR PRODUCING MANNITOL
Albert J. de Berardinis, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.
No Drawing. Continuation-in-part of abandoned application Ser. No. 827,897, May 26, 1969. This application Mar. 9, 1970, Ser. No. 17,884
Int. Cl. C07c 31/26
U.S. Cl. 260—635 C 10 Claims

An improved yield of mannitol is obtained when the hydrogenation of invert sugar is carried out as a two stage process, the first stage being alkaline and occurring at a feed pH of 8–10 and the second being acid and occurring at a pH less than 6. This process also proceeds at high reaction rates causing said process to be more economical.

3,763,247
PROCESS OF PRODUCING BUTANALS BY OXO SYNTHESIS, AND ITS APPLICATION TO THE MANUFACTURE OF ETHYLHEXANOL
Hans Lemke, Asnieres, and René Duval, Bois-Colombes, France, assignors to Societe Anonyme: Ugine Kuhlmann, Paris, France
Filed Feb. 14, 1969, Ser. No. 799,279
Claims priority, application France, Feb. 15, 1968, 140,024
Int. Cl. C07c 29/16
U.S. Cl. 260—638 HF 3 Claims

The invention relates to the hydroformylation of propylene for production of butanals and subsequent manufacture of ethylhexanol, with a cobalt-carbonyl catalyst, which in the recuperation, regeneration, and recycling cycle of the catalyst, makes use of a neutral solvent which can be produced from byproducts of the synthesis which by themselves, and used as such would not give the same result from the point of view of selectivity and yield.

3,763,248
PROCESS FOR PRODUCTION OF POLY-BROMINATED AROMATICS
Lawrence C. Mitchell, Southfield, Mich., assignor to Ethyl Corporation, Richmond, Va.
No Drawing. Filed Mar. 2, 1971, Ser. No. 120,345
Int. Cl. C07c 25/18
U.S. Cl. 260—649 D 10 Claims

A process for polybrominating aromatic compounds by reacting an aromatic compound with bromine at a temperature sufficient to sustain a rapid reaction rate is improved by conducting the process in the presence of a halogenation catalysts; for example, metal halides where the metal is selected from aluminum and iron, and solvent quantities of methylene bromide.

3,763,249
DIHALOGENATION OF 1,4-SUBSTITUTED ALKYLCYCLO-HEXANES
Abraham Schneider, Overbrook Hills, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.
No Drawing. Filed Mar. 31, 1971, Ser. No. 129,953
Int. Cl. C07c 17/00
U.S. Cl. 260—648 A 13 Claims

Alkylcyclohexanes having 2–6 unbranched alkyl substituents including a single substituent at each of the 1- and 4-positions are dichlorinated, dibrominated or difluorinated at the 1,4-positions by reaction with a C_4–C_5 tertiary alkyl chloride, bromide or fluoride. The reaction is ef-

fected by contacting a mixture of the reactants, containing a large molar excess (>2:1) of the tertiary alkyl halide, with 90–100% sulfuric acid or 90–100% hydrofluoric acid at a temperature below 50° C., preferably 0–30° C. The recovered 1,4 - dihaloalkylcyclohexanes have utility as intermediates for preparing difunctional derivatives, e.g. diacids, dialcohols or diamides, which are useful as monomers in polymer manufacture.

3,763,250
HALOGENATION PROCESS

Charanjit Rai, Somerset, and Alphonso W. Marcellis, Lake Interval, N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

No Drawing. Filed June 25, 1971, Ser. No. 157,043
Int. Cl. C07c *17/10*
U.S. Cl. 260—648 R **5 Claims**

A novel process for halogenating organic compounds under mild conditions using a halogenating system comprising halogen in a solution of phosphorus pentoxide in trimethyl phosphate. The process is particularly useful in the halogenation of difficulty halogenated acyl halides and cycloparaffins.

3,763,251
PROCESS FOR PREPARING BISORGANOALKALINE EARTH METAL COMPOUNDS FROM ORGANOLEAD COMPOUNDS

Peter West, Wellesley, and Mary C. Woodville, Milton, Mass., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 27, 1972, Ser. No. 275,466
Int. Cl. C07f *3/00, 3/04*
U.S. Cl. 260—665 R **7 Claims**

Compounds of the formula

$$(R)_2M,$$

wherein M is calcium, strontium or barium and R is vinyl, benzyl or alkyl-substituted benzyl are prepared in the novel process comprising contacting calcium, strontium or barium with a solution of

$$(R)_4Pb$$

in an inert solvent.

As an example, dibenzylcalcium was prepared by contacting a solution of tetrabenzyllead in tetrahydrofuran with metallic calcium for a period of 24 hours at room temperature.

3,763,252
5-ALKAPOLYENYL-2-NORBORNENES

Seimei Yasui, Takatsuki, Masaaki Hirooka, Ibaragi, and Teruo Oshima, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Continuation of abandoned application Ser. No. 799,995, Feb. 17, 1969. This application Aug. 16, 1971, Ser. No. 172,278
Claims priority, application Japan, Feb. 20, 1968, 43/10,961, 43/10,962; Mar. 5, 1968, 43/14,446
Int. Cl. C07c *5/24*
U.S. Cl. 260—666 PY **10 Claims**

Novel 5 - alkapolyenyl - 2 - norbornenes having, at 5-position thereof or through a hydrocarbon group substituted at 5-position of the norbornene nucleus, a non-conjugated straight chain hydrocarbon group derived from a compound obtained by polymerizing aliphatic conjugated diene. The 5-alkapolyenyl-2-norbornenes are obtained by contacting a 5-halogeno-2-norbornene or a 5-halogenated hydrocarbon-substituted-2-norbornene with aliphatic conjugated diene compound having 4 to 20 carbon atoms and an alkali metal or an organic alkali metal compound, or a compound obtained by polymerizing aliphatic conjugated diene compound having 4 to 20 carbon atoms, the compound having an alkali metal at the terminal position. These compounds are useful as, for example, third components of ethylene-propylene terpolymers.

3,763,253
VAPOR PHASE PREPARATION OF NORBORNENES

Milton S. Wing and Glenn W. Mathews, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

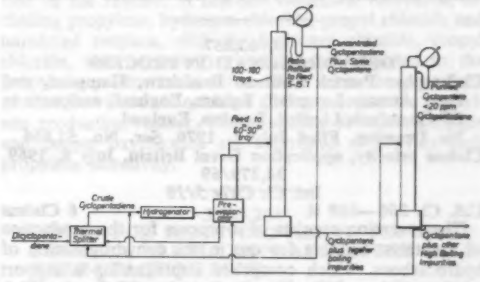
No Drawing. Filed May 30, 1972, Ser. No. 258,007
Int. Cl. C07c *5/24*
U.S. Cl. 260—666 PY **9 Claims**

Norbornene and alkyl substituted norbornenes are made by condensing olefins such as ethylene, propylene, etc. with dicyclopentadiene in the vapor phase in a pressurized reactor. The use of a substantial excess of olefin and the use of conditions such that the products and the reactants are in the vapor phase substantially eliminates by-products.

3,763,254
RECOVERY OF PURE CYCLOPENTENE

Bruno Engelhard, Leverkusen, and Heinrich Steude, Bergisch Gladbach, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 15, 1972, Ser. No. 263,090
Claims priority, application Germany, Dec. 2, 1971, P 21 59 832.3
Int. Cl. C07c *3/00*
U.S. Cl. 260—666 A **6 Claims**



In the production of pure cyclopentene by thermally splitting dicyclopentadiene to a product comprising cyclopentadiene, hydrogenating the product to convert cyclopentadiene to cyclopentene, and distilling the product in a cyclopentene-distillate column to recover pure cyclopentene, the improvement which comprises delivering the cyclopentene-containing product to be distilled to about the 60th to 90th tray of a cyclopentadiene-distillate column having about 100 to 180 trays, boiling off at the head of said column cyclopentadiene and other low-boiling components, condensing the distillate and recycling the major portion thereof to said column to establish a ratio of reflux to feed of about 5–15:1, withdrawing as the residue from said column a product containing less than about 20 p.p.m. of cyclopentadiene, and delivering said distillation residue to said cyclopentene-distillate column, the residue in said cyclopentene-distillate column comprising cyclopentane and other high-boiling components.

3,763,255

DEHYDROGENATION METHOD AND MULTICOMPONENT CATALYST FOR USE THEREIN

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 38,572, May 18, 1970. This application Feb. 1, 1972, Ser. No. 222,675

Int. Cl. C07c 5/18

U.S. Cl. 260—668 D 8 Claims

Dehydrogenatable hydrocarbons are dehydrogenated by contacting them at dehydrogenation conditions with a catalytic composite comprising a combination of catalytically effective amounts of a platinum component, an iridium component and an alkali or alkaline earth metal component with a porous carrier material in a manner such that the platinum and iridium components are uniformly dispersed in the carrier material and are present therein in amounts selected to result in an atomic ratio of iridium to platinum of about 0.5:1 to about 1.5:1. Moreover, the catalytic composite is prepared by: (a) forming a sulfur-free composite of platinum, iridium and an alkali or alkaline earth metal with a porous carrier material; (b) subjecting the resulting composite to a substantially sulfur-free oxidation step; and (c) contacting the resulting oxidized composite with a sulfur-free hydrogen stream at conditions selected to result in the reduction of substantially all of the platinum and iridium components to the corresponding elemental metallic state.

3,763,256

DIMERIZATION OF STYRENE COMPOUNDS

Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed June 7, 1972, Ser. No. 263,362

Int. Cl. C07c 3/20

U.S. Cl. 260—668 C 10 Claims

Styrene compounds are dimerized by treating said compounds in the presence of a catalyst comprising a molybdenum-containing compound at dimerization conditions.

3,763,257

DEHYDROGENATION PROCESS

Christopher Patrick Cadman Bradshaw, Hampton, and Peter Antony Longstaff, Egham, England, assignors to BP Chemicals Limited, London, England

No Drawing. Filed July 1, 1970, Ser. No. 51,666

Claims priority, application Great Britain, July 8, 1969, 34,279/69

Int. Cl. C07c 5/18

U.S. Cl. 260—669 R 6 Claims

The invention consists of a process for the production of a catalyst suitable for use in the dehydrogenation of hydrocarbons, which comprises impregnating a support with a solution of (1) a compound of molybdenum which decomposes on heating to form an oxide, a solution of (2) a basic compound of a metal selected from the group consisting of alkali alkaline earth metals and a solution of (3) a compound of a metal selected from Groups IB–V, VII and VIII of the Periodic Table, chromium, tungsten and uranium and drying the impregnated material. Also a process for the dehydrogenation of the hydrocarbon by contacting with the catalyst, in the presence of a hydrogen acceptor such as ethylene, propylene or carbon dioxide.

3,763,258

TWO-STEP DEHYDROGENATION PROCESS

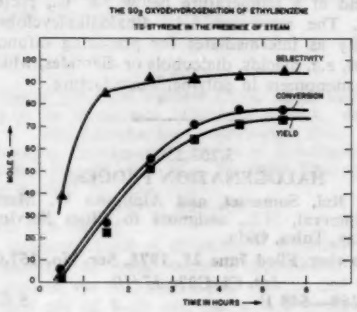
Abraham D. Cohen, Sarnia, Ontario, Canada, assignor to Esso Research and Engineering Company

Filed June 2, 1971, Ser. No. 149,257

Int. Cl. C07c 5/18

U.S. Cl. 260—669 R 25 Claims

Organic compounds having a dehydrogenatable carbon to carbon bond are dehydrogenated in a vapor phase reaction by passing said compounds with steam into a first reaction zone and reacting said mixture over an autoregenerative dehydrogenation catalyst and thereafter contacting the products formed in the first reaction zone in a second reaction zone with a sulfur oxide over a critically defined low surface area catalyst.



3,763,259

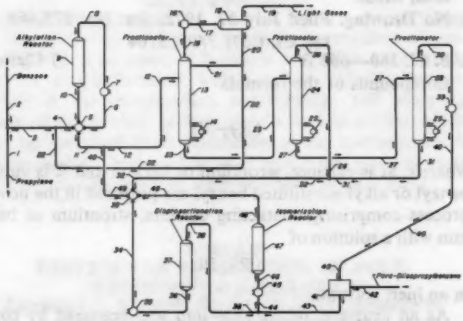
PROCESS FOR PRODUCING PARA-DIISOPROPYLBENZENE

George L. Hervert, Woodstock, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 15, 1971, Ser. No. 208,262

Int. Cl. C07c 3/52, 3/62, 5/24

U.S. Cl. 260—671 P 10 Claims



A process for producing para-diisopropylbenzene by alkylating benzene with propylene, separating unalkylated benzene, separating cumene, separating polyisopropylbenzenes, and separating ortho- and meta-diisopropylbenzene from the alkylation reaction product to provide para-diisopropylbenzene. The unalkylated benzene is recycled to the alkylation step; cumene and polyisopropylbenzenes are combined and disproportionated; and the disproportionated hydrocarbons and the ortho- and meta-diisopropylbenzene isomers are combined and isomerized. The isomerized hydrocarbons are recycled to the benzene separation step.

3,763,260

HYDROCARBON CONVERSION CATALYST

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 20,125, Mar. 16, 1970. This application Nov. 10, 1971, Ser. No. 197,375

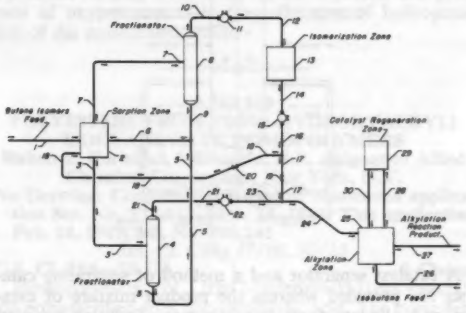
Int. Cl. C07c 3/62

U.S. Cl. 260—672 T 3 Claims

A catalytic composite comprising a mordenite component having a SiO_2/Al_2O_3 mole ratio of at least 40:1

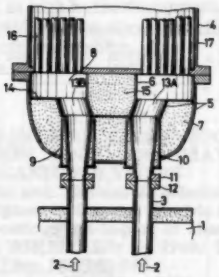
prepared by acid extracting Al_2O_3 from mordenite prepared with an initial SiO_2/Al_2O_3 mole ratio of about 12:1 to about 30:1 and a metal component selected from copper, silver and zirconium. The composite is particularly useful for the transalkylation of alkylaromatic hydrocarbons and the alkylation of aromatic hydrocarbons.

3,763,261
BUTENE SEPARATION, ISOMERIZATION AND ALKYLATION
Jay E. Sobel, Highland Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Dec. 1, 1971, Ser. No. 203,803
Int. Cl. C07c 3/52, 3/54
U.S. Cl. 260—683.49 **7 Claims**



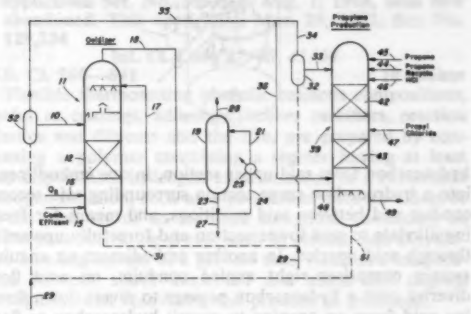
A process for producing an alkylation reaction product from an isoparaffin and an olefinic reactant containing 1-butene, 2-butene and isobutylene by separating the reactant, using a crystalline aluminosilicate, to provide a 1-butene stream and a 2-butene-isobutylene stream; alkylating the 2-butene-isobutylene stream; and isomerizing the 1-butene stream to form additional 2-butene isomer for the alkylation step.

3,763,262
PROCESS FOR CRACKING HYDROCARBONS
Takehiko Sato and Yuji Onishi, Yokkaichi, and Toshiji Omori, Yoshihito Abe, and Kazuyasu Suehiro, Kobe, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Mitsubishi Petrochemical Company Limited, Tokyo, Japan
Filed Dec. 20, 1971, Ser. No. 209,730
Claims priority, application Japan, Dec. 29, 1970, 46/128,035
Int. Cl. C07c 3/30; F28f 9/02
U.S. Cl. 260—683 R **8 Claims**



A process for producing useful olefins by thermally cracking hydrocarbons through a plurality of cracking tubes and cooling the resultant cracked gases through a single multitubular indirect cooler of vertical type, characterized by cooling the cracked gases through a cooler having in its lower portion a plurality of tubes gradually increased in diameter upwardly and connected to said cracking tubes and also an inlet gas chamber communicated to the upper ends of said upwardly expanded tubes and formed with a stepped bottom, without causing the streams of the cracked gases to merge through any inverted-Y-shaped tube joint or the like before the entrance of said cooler.

3,763,263
PRODUCTION OF PROPYLENE
Morgan C. Sze, Upper Montclair, Harvey D. Schindler, Paterson, and Herbert Riegel, Maplewood, N.J., assignors to The Lummus Company, Bloomfield, N.J.
Filed Feb. 16, 1972, Ser. No. 226,865
Int. Cl. C07c 5/18, 11/12
U.S. Cl. 260—683.3 R **27 Claims**

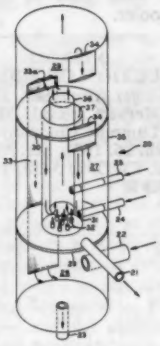


Propane, hydrogen chloride and a molten mixture of copper chlorides and copper oxychloride are passed cocurrently through a propylene production reactor, with propyl chloride being introduced at an intermediate portion of the reactor. A reaction effluent is recovered, including propylene, hydrogen chloride, propyl chloride and unreacted propane, with the hydrogen chloride, propyl chloride, and unreacted propane being recycled to the propylene production reactor. Melt from the propylene production reactor is oxidized and recycled to the propylene production reactor. The quantities of cupric chloride and copper oxychloride are controlled to provide high propylene selectivity.

3,763,264
METHOD FOR REMOVING ALKYL FLUORIDE FROM AN ALKYLATION ADMIXTURE IN A RISER-REACTION ZONE
Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Apr. 30, 1971, Ser. No. 139,017
Int. Cl. C07c 3/54
U.S. Cl. 260—683.42 **7 Claims**

Alkyl fluoride in isoparaffin-olefin alkylate produced in presence of HF catalyst, e.g., an alkylate produced by alkylating isoparaffin with ethylene and isobutylene or propylene with an HF catalyst, is caused to alkylate an isoparaffin in the presence of additional HF acid catalyst by passing the alkylate upwardly through nozzles into a riser-reactor and at the nozzles admixing with the alkylate the additional HF acid of a desirable kind in a desirable quantity to cause conversion of the alkyl fluoride to additional alkylate, the apparatus in which the invention is carried out essentially being composed of a vessel having a lower, mid and upper sections, a riser-reactor conduit being juxtaposed over hydrocarbon spray nozzles in a partition between the lower and mid sections, but not extending down to said partition, a second conduit surrounding the riser-reactor conduit extending from said

partition to an apertured partition between the mid and upper sections, said second conduit at its upper end being in sealing engagement with said apertured partition and in register with the aperture therein, said riser conduit extending to a level above said apertured partition, and downcomer means for flowing acid from said upper section to said lower section, downcomer means for flowing



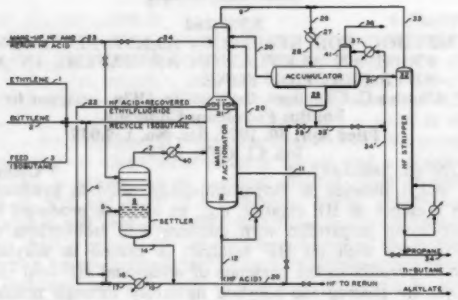
hydrocarbon from said upper section, in one embodiment, into a hydrocarbon surge section surrounding said second conduit and between said partitions, and means for feeding alkylate to said lower section and forcefully upwardly through said nozzles. In another embodiment an angular system comprises right angled conduits, an acid flow diverter over a hydrocarbon passage to divert down flowing acid from an opening to permit hydrocarbon to flow essentially horizontally through said opening is described.

3,763,265

RECOVERY OF ETHYLFLUORIDE FROM ISOPARAFFIN-ETHYLENE AND HIGHER OLEFIN ALKYLATION BY EXTRACTIVE DISTILLATION OF PROPANE-CONTAINING STREAM OBTAINED FROM ALKYLATION EFFLUENT

Thomas Hutson, Jr., and Cecil O. Carter, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Sept. 7, 1971, Ser. No. 178,353
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.42 **7 Claims**



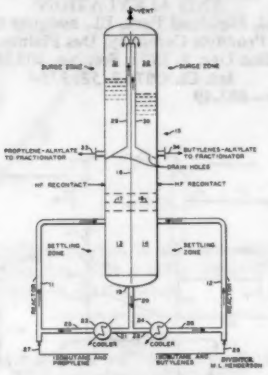
In the alkylation of an isoparaffin, e.g. isobutane and/or isopentane with ethylene and a higher olefin, e.g., propylene, butylenes, amylenes, hexenes, etc., the hydrocarbon phase from the alkylation effluent is fractionated and vapors and liquid in the fractionation zone containing propane and ethylfluoride are subjected therein to extractive distillation with hydrogen fluoride, thus recovering ethylfluoride and passing thus recovered ethylfluoride contained in the hydrogen fluoride to alkylation.

3,763,266

ALKYLATION UTILIZING SURGE CHAMBERS WITH SETTLING CHAMBERS IN A COMMON CATALYST SYSTEM

Miles L. Henderson, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Aug. 30, 1971, Ser. No. 175,979
Int. Cl. C07c *3/52*
U.S. Cl. 260—683.43 **4 Claims**



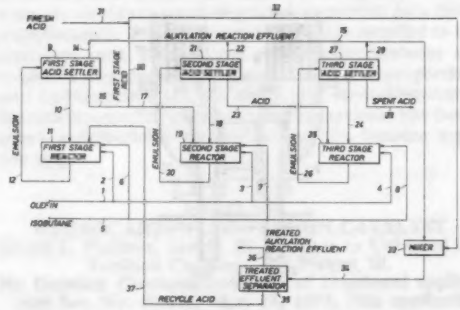
A catalyst separator and a method of separating catalysts are provided wherein the product mixture of catalyst and alkylate from two separate alkylation reaction zones using a common catalyst are maintained separately in two liquid full chambers in which catalyst is allowed to settle and is removed from a common outlet with mixing of the catalyst streams and return of the mixed catalyst to separate reaction zones. Liquid alkylate product overflows from the settling zones into separate surge zones so arranged in relation to the settling zones that there is a constant head of liquid in the settling zone overflowing into the separate surge zones. This separation prevents build up of one of the alkylate products in the settler from forcing the alkylate from one chamber into either the catalyst outlet or into the alkylate product in the other chamber of the separator.

3,763,267

REMOVING DIALKYL SULFATES FROM AN ALKYLATION REACTION EFFLUENT

William R. Hollowell, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,283
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.46 **5 Claims**



A multi-stage alkylation process for alkylating lower isoparaffins with lower olefins in the presence of sulfuric

acid catalyst wherein dialkyl sulfates are removed from an alkylation reaction effluent stream by a sulfuric acid treatment step.

3,763,268

PROCESS FOR HYDROGENATING UNSATURATED HYDROCARBONS BY USE OF SMALL AMOUNTS OF OXYGEN

Gilford A. Chappel, Colonia, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,222

Int. Cl. C07c *5/02*

U.S. Cl. 260—683.9 12 Claims

Unsaturated hydrocarbons and substituted unsaturated hydrocarbons are hydrogenated in the presence of oxygen at a temperature ranging from 500° K. to 2000° K. and a pressure ranging from .1 to 100 atmospheres. The presence of oxygen acts to increase the rate of hydrogenation of the unsaturated bonds.

3,763,269

POLYESTERS FROM TRIS(2-HYDROXYALKYL) ISOCYANURATE HOMOPOLYMERS

Robert L. Formaini, Millington, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 715,512, Mar. 25, 1968. This application Feb. 18, 1969, Ser. No. 800,263

Int. Cl. C08g *17/06, 39/10*

U.S. Cl. 260—75 UA 2 Claims

Homopolymers of tris(2-hydroxyalkyl)isocyanurate are polyesterified with polycarboxylic acid. The polyesters may be modified with polyisocyanate, metal drier, phenol-formaldehyde or triazine-formaldehyde resins, or polyhydric alcohols to provide electrical insulator material for wire enamels and varnishes, and can also form ester-imide copolymers.

The homopolymer is prepared by dissolving the isocyanurate monomer and acid catalyst in water and then azeotroping off the solvent water and up to 0.75 mol of water of condensation per mol of isocyanurate monomer.

3,763,270

ALKYLATION IN LIQUID MEDIUM WITH HYDROGEN CHLORIDE AND FREE RADICAL GENERATING COMPOUND

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,709

Int. Cl. C07c *3/52, 3/54*

U.S. Cl. 260—683.47 10 Claims

Gaseous alkylated hydrocarbons may be alkylated with an olefinic hydrocarbon by effecting the reaction in the presence of a hydrogen chloride compound and a catalyst comprising a free radical generating compound at a temperature at least as high as the decomposition temperature of the catalyst, said reaction also being effected in a liquid saturated hydrocarbon medium.

3,763,271

METHOD FOR INTRODUCING IMIDO-ALKYLENE-SUBSTITUTION INTO AROMATIC CARBOCYCLIC ORGANIC POLYMERS

Johann F. Klebe and Thomas J. Windish, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 838,322, July 1, 1969. This application June 23, 1971, Ser. No. 156,066

Int. Cl. C08g *20/00*

U.S. Cl. 260—78 UA 20 Claims

A Friedel-Crafts' alkylation method is provided for introducing imido-alkylene substitution, such as maleimido-methylene-substitution, into a variety of organic polymers having chemically-combined aromatic carbocyclic organic radicals, as pendant radicals along the polymer chain, such as polystyrene, poly(styrene-vinylic or, dienic copolymers or terpolymers) etc. Reaction is effected between an imido-methylene compound and an organic polymer having chemically-combined aromatic carbocyclic organic radicals in the presence of a Friedel-Crafts' catalyst, such as boron trifluoride. The imido-alkylene-substituted aromatic carbocyclic organic polymers can be employed in making molding compounds, laminates, varnishes, etc.

3,763,272

FLEXIBLE PHENOLIC CARBAMIDO RESINS

Sung Ki Lee, Niagara Falls, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 849,259, Aug. 1, 1969, which is a continuation of application Ser. No. 569,062, Aug. 1, 1966, both now abandoned. This application Mar. 29, 1971, Ser. No. 129,234

Int. Cl. C08g *37/18, 41/04*

U.S. Cl. 260—841 10 Claims

Flexible thermosetting phenolic resinous compositions, useful as coatings, adhesives, rubber tackifiers, reaction plastics and diluents and the like, are prepared by condensing a polymer containing a segmer having at least one displaceable hydrogen atom attached to a carbamido nitrogen function, such as a polyamide, with an aldehyde in the presence of an aromatic compound containing an ortho-para activating group, such as phenol, and a hydrogen bonding solvent at a pH less than 7 and at a temperature between about minus 20 and about 200 degrees centigrade, and recovering the product so produced.

3,763,273

IMIDO-SUBSTITUTED POLYAMIDE COMPOSITIONS BLENDED WITH POLYVINYL CHLORIDE

Fred F. Holub and Milton L. Evans, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Original application July 1, 1969, Ser. No. 838,315. Divided and this application Apr. 21, 1971, Ser. No. 136,240

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 UN 2 Claims

Polyamides having at least one chemically combined aliphatically unsaturated imido radical are provided and a method for making such materials. Blends of the imido-substituted polyamides and a variety of aliphatically unsaturated organic monomers, such as styrene, N-phenylmaleimide, bismaleimides or organic polymers, such as polyphenylene oxides, polyvinyl chloride, polystyrene, polysulfone, polycarbonate, epoxy resins, phenolformaldehyde resins, etc., also are provided. The imido-substituted compositions of the present invention can be employed as molding compounds, laminates, varnishes and adhesives.

3,763,274

TACKY LOW-TEMPERATURE CURING POLYISOCYANATE ADHESIVE COMPOSITION

Samuel Shan-Ning Wang, Cheshire, and Donald Francis Rossler, Monroe, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 4, 1972, Ser. No. 215,408

Int. Cl. C08g *41/04, 22/12, 22/16*

U.S. Cl. 260—858 7 Claims

A tacky adhesive composition which cures at room temperature to strong, adhesive, and flexible state is obtained when (1) a normally solid polyol-arylene-diisocyanate prepolymer carrying at least three isocyanato substituents; (2) a normally solid linear prepolymer com-

posed of polyester and polyurethane linkages and carrying two terminal alcoholic —OH substituents; (3) a saturated polyol having a molecular weight in excess of 2,000 and having an average content of at least three alcoholic —OH substituents per molecule; and (4) a difunctional monomeric curing agent for the components of said composition which carry isocyanato substituents, the functional groups of said agent being separated by at least 4 carbon atoms; are mixed when approximately equivalent reactive ratio.

3,763,275

CURING PROCESSES EMPLOYING β-SUBSTITUTED DIPEROXYKETALS

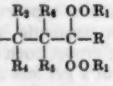
Jurgen Groepper, Gunzburg, Germany, and Jose Sanchez, Grand Island, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Original application June 3, 1970, Ser. No. 43,208, now Patent No. 3,686,102. Divided and this application Feb. 18, 1972, Ser. No. 227,662

Int. Cl. C08f *21/00*

U.S. Cl. 260—861 **4 Claims**

Improvements in the polymerization of ethylenically unsaturated monomers, the curing of unsaturated polyester resin compositions, and the curing (preferably curing and foaming) of elastomer compositions are achieved by the use of certain β-substituted diperoxyketals of the formula



such as 2,2-di(t-butylperoxy)-4-methylpentane and 4,4-di(t-butylperoxy)heptane.

3,763,276

ENAMEL COMPOSITIONS OF DIPHENOL CONTAINING POLYESTERS DERIVED FROM TRIS-(2 - HYDROXYALKYL)ISOCYANURATES AND DIISOCYANATES

John M. Kolyer, Convent, and Albert A. Kveglis, Pine Brook, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Oct. 30, 1968, Ser. No. 771,999, now Patent No. 3,632,837. Divided and this application May 24, 1971, Ser. No. 146,476

Int. Cl. C08g *20/32, 22/10*

U.S. Cl. 260—857 R **16 Claims**

Incorporation of a diphenol in a polyester reaction product of a tris(2-hydroxyalkyl)isocyanurate and a polycarboxylic acid avoids gel formation and provides a thermo-oxidatively stable polyester with excellent adhesion properties.

3,763,277

PROCESS FOR THE PREPARATION OF INTERPOLYMERS OF POLY(ETHYLENE OXIDE)

Nan Shieh Chu, Hartsdale, N.Y., and Lloyd Henry Wartman, Westport, Conn., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Feb. 19, 1970, Ser. No. 12,866. Divided and this application July 1, 1971, Ser. No. 162,727

Int. Cl. C08g *43/02*

U.S. Cl. 260—874 **3 Claims**

Interpolymers of poly(ethylene oxide) and a vinyl monomer or mixtures of vinyl monomers prepared by combining poly(ethylene oxide), the vinyl monomer or mixtures of vinyl monomers in an aqueous medium and polymerizing the vinyl monomer or monomers in the presence of a redox catalyst system composed of a ferrous salt and an oxidizing agent. The products formed are castable into films having unique physical properties.

3,763,278

OLEFINIC NITRILE-STYRENE COPOLYMERIZATION PROCESS

Russell K. Griffith, Chagrin Falls, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 874,699, Nov. 6, 1969. This application Aug. 10, 1970, Ser. No. 62,655

Int. Cl. C08f *19/08, 15/22*

U.S. Cl. 260—880 R **5 Claims**

Acrylonitrile and styrene are copolymerized in the presence of a preformed elastomer such as a butadiene-acrylonitrile copolymer in such a manner that the mole ratio of acrylonitrile to styrene in the polymerization mixture is maintained in a predetermined range and the resulting copolymer is composed of a predetermined mole ratio of polymerized acrylonitrile to styrene.

3,763,279

HIGH IMPACT VINYL CHLORIDE RESIN FORMULATIONS OF IMPROVED CLARITY AND METHOD OF MAKING SAME

Philip C. Kelley, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed May 12, 1971, Ser. No. 142,748

Int. Cl. C08f *19/10, 41/12*

U.S. Cl. 260—884 **4 Claims**

A method of making high impact vinyl chloride resin formulations comprising two consecutive stages of over-polymerization, the first of which is an over-polymerization in aqueous dispersion which deposits a tough, rubbery, essentially completely-gelled polyacrylate on seed resin particles of insoluble or crosslinked styrene copolymer and, in the second stage, over-polymerization, the rubber-coated first-stage styrene copolymer seed particles are encased in a matrix of hard vinyl chloride resin. The particle size of the styrene copolymer seed resin latex particles is critical, high impact products being obtained only with seed particles averaging about 200 to about 1700 A., more preferably between about 350 A. and about 1300 A. The thickness of the rubbery coating on the seed latex particles resulting from the first stage over-polymerization likewise is critical, high impact products being obtained when such coating is from about 25 to about 500 A. in thickness. A most preferred modification which is not only essentially clear and essentially free of haze but also develops high impact resistance is produced when seed particles of cross-linked styrene copolymer averaging from about 200 to about 800 A. in diameter are given a grafted coating or shell of gelled acrylate from about 25 A. to about 90 A. in thickness and the resulting product then over-polymerized with a hard vinyl chlorde resin. Both grafting and a critically-thin acrylate shell are necessary to produce the clear version of the products of this invention. Grafting is obtained most easily by crosslinking the styrene copolymer seed resin particles with a monomer such as allyl methacrylate containing at least two polymerizable groupings of markedly differing polymerization reactivity with styrene monomer such as to leave at least a few of polymerizable reactive sites on the surface of the seed particles.

3,763,280

METHOD OF MANUFACTURING A FLUORINATED POLYMER AND BLENDS OF SAID FLUORINATED POLYMER WITH POLYETHYLENE

Ronald E. Gilbert, Shawnee Mission, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Original application Aug. 17, 1970, Ser. No. 64,512, now Patent No. 3,709,855. Divided and this application May 9, 1972, Ser. No. 251,715

Int. Cl. C08f *29/22*

U.S. Cl. 260—897 C **2 Claims**

Unsaturated polymers made by thermal deacetoxylation of ethylene-vinyl acetate copolymers are fluorinated

under mild conditions, as by in situ-generated lead tetrafluoride, to yield readily processable thermoplastic fluorohydrocarbon polymers which can be blended with polyethylene.

3,763,281

UREIDOALKYLPHOSPHONATES

Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed June 26, 1970, Ser. No. 50,304

Int. Cl. C07f 9/40; D06c 27/00

U.S. Cl. 260—932 5 Claims

Novel ureidoalkylphosphonates, methods for their preparation as well as for their use in preparing durable, flameproof finishes for textiles are disclosed These ureidoalkylphosphonates are found to be low in cost, readily prepared and of minimal toxicity.

3,763,282

PERFLUOROALKYL PHOSPHONATES

Leon H. Chance and Jerry P. Moreau, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application July 18, 1969, Ser. No. 843,200, now Patent No. 3,639,144. Divided and this application June 9, 1971, Ser. No. 151,558

Int. Cl. C07f 9/40

U.S. Cl. 260—932 3 Claims

Perfluoroalkyl iodide monomer and telomer ester adducts of diethyl vinylphosphonate were prepared by free radical addition. Iodine of these adducts was replaced by hydrogen, and derivatives of the reduced phosphonate adducts were prepared, which include phosphonic acids, acid chlorides, and aziridinyl phosphine oxides. The aziridinyl phosphine oxides are used to impart oil and water repellency to cellulosic textiles. The other derivatives are useful as chemical intermediates as well as potential foaming agents.

3,763,283

N-HYDROXYMETHYLATED DIALKYL PHOSPHONOALKYL CARBAMATES

Mark N. Curgan, Greenville, S.C., assignor to C. H. Patrick & Co., Inc., Greenville, S.C.

No Drawing. Filed Oct. 17, 1969, Ser. No. 870,423

Int. Cl. C07f 9/40

U.S. Cl. 260—938 3 Claims

Novel compositions suitable for use as flame retardants and having insecticidal properties, N-hydroxymethylated dialkyl phosphonoalkyl carbamates and N-hydroxymethylated di(haloalkyl) phosphono alkyl carbamates.

3,763,284

SUBSTITUTED S,S-DICHLOROMETHYL O,O-DIORGANO THIOPEROXYPHOSPHORODITHIOATES

Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 20, 1971, Ser. No. 182,133

Int. Cl. C07f 9/16

U.S. Cl. 260—934 11 Claims

Substituted S,S-dichloromethyl O,O-diorgano thioperoxyphosphorodithioates are prepared from substituted dichloromethane sulfenyl chlorides by reaction with an O,O-diorgano phosphorodithioate. These compounds are pesticidally active and particularly useful as pre-emergent herbicides.

3,763,285

1-PHENYL-2-CYANOVINYL(THIO)-PHOSPHORIC OR -PHOSPHONIC ACID ESTERS

Hans-Jochem Riebel, Wuppertal-Elberfeld, Ingeborg Hammann, Cologne, Günter Unterstenhöfer, Opladen, Wolfgang Behrenz, Cologne, and Wilhelm Stendel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

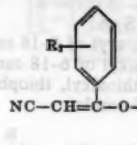
No Drawing. Filed June 7, 1971, Ser. No. 150,847

Claims priority, application Germany, June 20, 1970, P 20 30 509.3

Int. Cl. A01n 9/36; C07f 9/16

U.S. Cl. 260—940 9 Claims

1-phenyl-2-cyanovinyl(thio)-phosphoric or -phosphonic acid esters of the general formula



(I)

in which

X is oxygen or sulfur,

R_1 is lower alkyl,

R_2 is lower alkyl or alkoxy, phenyl or lower monoalkylamino, and

R_3 is hydrogen, halogen, lower alkyl, alkoxy or alkylmercapto,

which possess insecticidal, acaricidal, ectoparasiticidal, fungicidal, bactericidal and rodenticidal properties.

3,763,286

CYANOPHENYL PHOSPHATES

Shigeo Kishino, Yasuo Yamada, Yoshio Kurahashi, and Toyohiko Kume, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,138

Claims priority, application Japan, Dec. 30, 1969, 45/105,487

Int. Cl. A01n 9/36; C07f 9/12

U.S. Cl. 260—940 9 Claims

Cyanophenyl phosphates, i.e., optionally halogen-substituted o-cyanophenyl-O-lower alkyl - O - phenyl phosphates, which possess fungicidal properties, and which may be produced by reacting the corresponding phosphoric acid diester monohalide with cyanophenol or its salt.

3,763,287

PHOSPHORUS CONTAINING DERIVATIVES OF ω-(3,5-DIALKYL-4-HYDROXYPHENYL) ALKANOLS

Max Eugene Chiddix, League City, Tex., and David James Tracy, Phillipsburg, N.J., assignors to GAF Corporation, New York, N.Y.

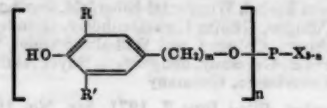
No Drawing. Filed Sept. 28, 1970, Ser. No. 76,313

Int. Cl. C07f 9/16; B01j 1/18

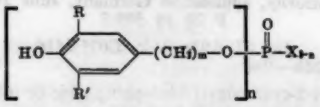
U.S. Cl. 260—941 22 Claims

Phosphorus containing derivatives of ω-(3,5-dialkyl-4-hydroxyphenyl) alkanols, e.g. phosphites, phosphates, phosphonates, thiophosphates and thiophosphonates thereof, are described; together with methods for their prep-

aration and their use as antioxidants. These products are represented by the following general formula:



and

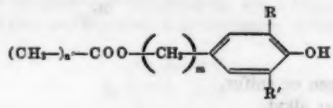


wherein

R and R′=alkyl of 1–18 carbons, arylalkyl of 7–18 carbons and cycloalkyl of 6–18 carbons

m=1–4, n=1–3, Q=O or S and

X=alkyl of 1–24 carbons, aryl of 6–18 carbon, arylalkyl of 7–18 carbons, cycloalkyl of 6–18 carbons, phenoxy, alkoxy, alkylphenoxy, thioalkyl, thiophenyl, haloalkyl or alkylcarboxyl of the formula:



wherein n'=1–4 and R, R′ and m are as defined above.

3,763,288

O-LOWER ALKYL-O-SUBSTITUTED PHENYL-S-ALKOXYETHYLPHOSPHOROTHIOLATES

Shigeo Kishino, Tokyo, Akio Kudamatsu, Kawasaki, Yoshio Kurahashi, Tokyo, and Kozo Shiokawa, Kawasaki, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,630

Claims priority, application Japan, Feb. 3, 1970, 45/8,995

Int. Cl. C07f *9/18;* A01n *9/36*

U.S. Cl. 260—949 **14 Claims**

O-lower alkyl-O-substituted phenyl S-alkoxyethyl-phosphorothiolates, i.e. O-methyl or -ethyl-O-substituted phenyl-S-lower alkoxy-ethylphosphorothiolates, which possess insecticidal, acaricidal, nematocidal and fungicidal properties.

3,763,289

O-ETHYL-S-ALKOXYETHYL-S-PHENYL-PHOSPHORODITHIOLATES

Shigeo Kishino, Tokyo, and Akio Kudamatsu and Kozo Shiokawa, Kanagawa-ken, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

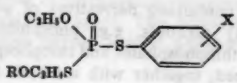
No Drawing. Filed May 18, 1971, Ser. No. 144,685

Claims priority, application Japan, May 22, 1970, 45/43,264

Int. Cl. C07f *9/16;* A01n *9/36*

U.S. Cl. 260—950 **8 Claims**

O-ethyl-S-alkoxyethyl - S - phenyl-phosphorodithiolates of the general formula



(I)

in which

R is a lower alkyl group, and

X is a hydrogen or halogen atom or a lower alkyl group,

which possess insecticidal, acaricidal, nematocidal and fungicidal properties.

3,763,290

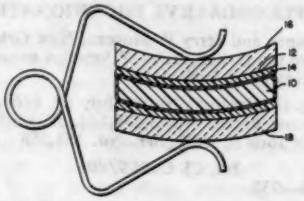
METHOD OF APPLYING MAR RESISTANT COATINGS TO TRANSPARENT BODIES OF SUPER STRONG PLASTICS

Clarence A. Sheld, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Original application Mar. 30, 1970, Ser. No. 23,909, now Patent No. 3,673,055. Divided and this application Dec. 6, 1971, Ser. No. 205,431

Int. Cl. B29d *11/00*

U.S. Cl. 264—1 **3 Claims**



Transparent bodies, particularly ophthalmic lenses, having cores of super strong plastic, outer surface layers of abrasion resistant thermosetting resins such as the allyl and methacrylic esters and an intermediate layer of a polyamide. The cores are of Bisphenol-A polycarbonate, or of a clear, heterogeneous blend known as ABS, which is a polyblend of three resins. The surface layer is polymerized in situ. The polyamide is selected from among those soluble in alcohol or a mixture of alcohol and hydrocarbons. It serves both as an adhesive to bond the surface layers securely to the cores and as a barrier agent to protect the cores from chemical attack by the monomer of the surface layer material. The surface layer is preferably cured in a mold which defines the shape and surface finish of the completed body.

3,763,291

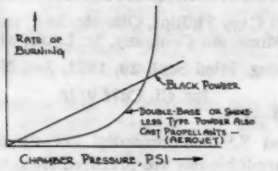
METHODS OF FORMING CHARGES OF SOLID FUELS BY HYDRAULIC COMPRESSION

Alfred C. Loedding, Dayton, Ohio, assignor to Twin Fair, Inc.

Filed Mar. 10, 1951, Ser. No. 214,921

Int. Cl. C06b *21/02*

U.S. Cl. 264—3 R **8 Claims**



Method of forming a solid propellant charge wherein fluid pressure is applied against a casing that contains

the propellant ingredients to obtain unique density gradients in the charge.

3,763,292

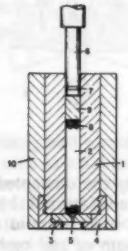
MANUFACTURE OF BONDED-PARTICLE NUCLEAR FUEL COMPOSITES

James G. Stradley, Oak Ridge, and John D. Sease, Knoxville, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 1, 1971, Ser. No. 185,641

Int. Cl. G21c *21/02*

U.S. Cl. 264—.5 **1 Claim**



A preselected volume of nuclear fuel particles are placed in a cylindrical mold cavity followed by a solid pellet of resin-carbon matrix material of preselected volume. The mold is heated to liquefy the pellet and the liquefied matrix forced throughout the interstices of the fuel particles by advancing a piston into the mold cavity. Excess matrix is permitted to escape through a vent hole in the end of the mold opposite to that end where the pellet was originally disposed. After the matrix is resolidified by cooling, the resultant fuel composite is removed from the mold and the resin component of the matrix carbonized.

3,763,293

PROCESS OF MOLDING GIANT ARTICLES OF STRUCTURED PLASTIC

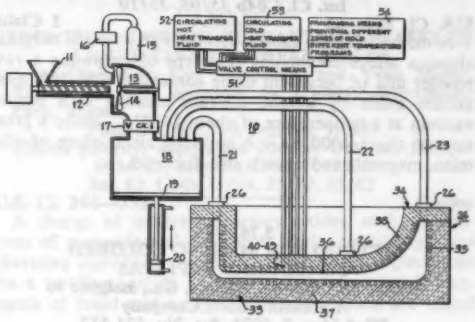
Frank J. Nussbaum, New York, N.Y., assignor to Bischoff Chemical Corporation, Hicksvillle, N.Y.

Continuation-in-part of applications Ser. No. 10,920, Feb. 12, 1970, now abandoned, and Ser. No. 149,901, June 9, 1971, now Patent No. 3,671,168, the latter being a continuation of abandoned application Ser. No. 752,518, Aug. 14, 1968, and the former being a continuation-in-part of the same. This application Feb. 3, 1972, Ser. No. 223,334

Int. Cl. B06b *3/00;* **B29d** *27/00;* **B29f** *1/06*

U.S. Cl. 264—23 **10 Claims**

Giant sized plastic articles are mass produced with automation by low pressure injection molding. An article is designed to achieve the ultimate engineering performance of the internal structure in relation to its external shape, thus providing zones in which the internal structure is different from other zones, and such differences are imparted by the control of the molding process. The proportions of gas and molten plastic are carefully controlled prior to the accumulation of the feed in a batching device. A shot of feed flows through a distribution system into a structurizer mold having contoured walls of low specific heat and having heat transfer means permitting differential programming of the temperature of different zones. Before the article has solidified in the structurizer mold, the desired differences in internal structure are imparted by reason of the differential temperature



programming, and/or differential pressure programming for different zones of the article. Various supplemental and/or optional features are disclosed.

3,763,294

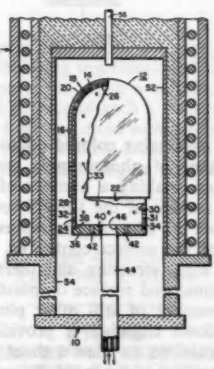
FIRING VITREOUS SILICA ARTICLES WHILE SUPPORTED ON A PERFORATED THIN-WALLED GRAPHITE MANDREL

Carmine A. Nicastro, Jr., Big Flats, Roelant S. L. Vander Noordaa, Corning, and William A. Ward, Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed June 28, 1971, Ser. No. 157,301

Int. Cl. C04b *33/32, 35/14, 35/60*

U.S. Cl. 264—57 **9 Claims**



Improvement in the step of firing a high purity, close tolerance, vitreous silica article capable of being inside-supported, whereby the article is supported on its inner surface only, in a bottom-end-up position on a perforated, thin-wall graphite support having an outer surface substantially complementary in shape to the inner surface of the article and sintered in the presence of at least one protective gas atmosphere for a time sufficient to completely fuse the article.

3,763,295

USE OF ALUMINA AS A SINTERING AID IN MANUFACTURE OF HOT PRESSED BERYLLIA

Jacob Greenspan, Newton, Mass., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,442
Int. Cl. C04b *35/08, 35/10*
U.S. Cl. 264—65 1 Claim

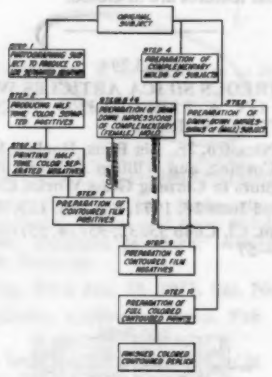
A method for the fabrication of high strength beryllia-alumina alloys comprising the steps of preparing a raw powder mix of beryllium oxide containing 5 to 20% aluminum oxide by weight, die-ram pressing in a partial vacuum at a temperature of about 1400° C. under a pressure of about 4000 p.s.i. A sintering aid mixture of alumina, magnesia and silica is also disclosed.

3,763,296

METHOD FOR MAKING COLORED CONTOURED REPLICAS

Walter H. Burrows, Atlanta, Ga., assignor to American Charts Company

Filed Mar. 5, 1971, Ser. No. 121,433
Int. Cl. B29c *1/02*
U.S. Cl. 264—71 4 Claims


ORIGINAL SUBJECT
STEP 1
PHOTOGRAPHING SUBJECT TO PRODUCE (3) HALF TONE COLOR SEPARATED NEGATIVES
STEP 4
PREPARATION OF COMPLEMENTARY MOLDS OF SUBJECTS
STEP 2
PRODUCING HALF TONE COLOR SEPARATED POSITIVES
STEPS 5 & 6
PREPARATION OF SOME (SOME IMPRESSIONS OF COMPLEMENTARY (FEMALE) MOLDS
STEP 7
PREPARATION OF DRAW-DOWN IMPRESSIONS OF MALE) SUBJECTS
STEP 3
PRINTING HALF TONE COLOR SEPARATED NEGATIVES
STEP 8
PREPARATION OF CONTOURED FILM POSITIVES
STEP 9
PREPARATION OF CONTOURED FILM NEGATIVES
STEP 10
PREPARATION OF FULL COLORED CONTOURED PRINTS
FINISHED COLORED CONTOURED REPLICA

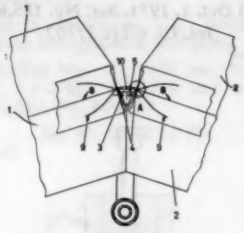
A method of producing colored contoured replicas by effecting a number of photographic steps of a subject contoured surface, making a number of molds complementary to the surface of the subject contoured surface, making a number of draw-down impressions on plastic sheet material of the subject contoured surface and the complementary mold structure and thereafter producing replicas of the contoured surface on plastic sheet material by effecting a number of still other photographic processes. A draw-down chamber is provided for effecting draw-down impressions on plastic sheet material against the contoured surfaces of the molds by creating a vacuum between the plastic sheet material and the upper surface of the molds, heating the plastic sheet material and applying pressure to the upper surface thereof to effectively press the heated plastic sheet material against the contoured surface of the molds. A vacuum frame means is provided for bringing two drawn-down sheets of plastic material into complete registration contact with each other by exhausting the air therebetween to create a vacuum. The vacuum frame means is utilized to bring two sheets of plastic material into complete contact with each other in certain of the photographic steps to produce the finished product of the contoured replica.

3,763,297

METHOD FOR TRIMMING THE BOTTOM OF HOLLOW SYNTHETIC RESIN ARTICLES

Elio Del Piero, Zaventem, and Willy Wautriche, Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Feb. 4, 1971, Ser. No. 112,726
Claims priority, application Belgium, Feb. 5, 1970, 84,814
Int. Cl. B29c *17/07, 17/12*
U.S. Cl. 264—98 1 Claim



Method for removing the unwanted material from the bottom of articles manufactured by blow-molding. A parison is enclosed in a blow-mold cavity and a knife is moved past the bottom of the mold transversely with respect to the closing plane thereof to shear off the unwanted material. The knife may be double edged so as to shear off the unwanted material from parisons enclosed in successive molds. The knife is preferably mounted on one arm of a lever member having two arms. The knife may then be moved by the actuation of the other arm of the lever.

3,763,298

BONDING OF POLYETHYLENE TO METAL SURFACES

Lewis Godfrey Sharman and Richard Morris, Surbiton, England, assignors to Graseby Instruments Limited, Surbiton, Surrey, England

No Drawing. Filed May 13, 1971, Ser. No. 143,270
Claims priority, application Great Britain, May 13, 1970, 23,093/70
Int. Cl. B32b *7/00*
U.S. Cl. 264—135 11 Claims

To bond polyethylene to a surface of a metal article, the article (if not of lead) is plated with lead and oxidised to form a lead peroxide coating; a first coating of polyethylene is then injection moulded onto the lead peroxide coated surface and the article is baked at a temperature of 440° to 490° C. for 2–3 hours to bond the polyethylene to the coated surface. The hardened skin of oxide which is formed due to the baking, is removed from the polyethylene coating and then a second polyethylene coating is injection moulded onto the article.

3,763,299

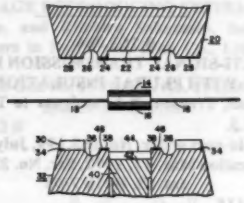
DRY SPINNING PROCESS FOR HOLLOW ACETATE FIBER

Stephen W. So, Wilmington, Del., assignor to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,452
Int. Cl. D01f *3/26*
U.S. Cl. 264—207 5 Claims

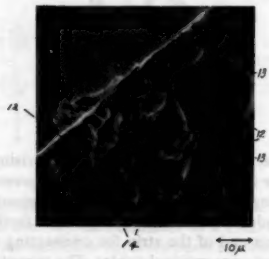
A method of preparing hollow cellulose acetate filaments by dry spinning an acetone soluble cellulose acetate solution wherein the solvent comprises acetone having carbon disulfide dissolved therein. The solution is spun under conventional dry spinning conditions to produce hollow filaments.

3,763,300
METHOD OF ENCAPSULATING ARTICLES
Keith Gordon Spanjer, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Original application Nov. 19, 1969, Ser. No. 878,104, now Patent No. 3,685,784. Divided and this application July 26, 1971, Ser. No. 166,259
Int. Cl. B29f *1/10*
U.S. Cl. 264—272 **2 Claims**



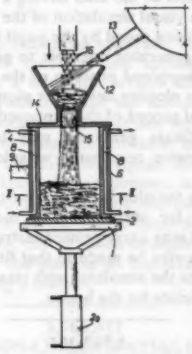
A method of molding and a mold are provided for encapsulating devices such as axial lead cylindrical electrical devices in which two separable portions of the mold closely embrace the axial leads near the axial ends of the mold cavity and one of the mold portions includes piston-like parts, one for each molding cavity, which moves between at least two positions. In one position of a piston-like part of the mold, a mold cavity is open to receive encapsulating fluid and in the other position of the part the mold cavity is completely closed. In a modification, the piston-like parts are each shaped and positioned to form parts of adjacent molding cavities. The molding process involves supplying encapsulating fluid to the several cavities by applying pressure to the whole body of fluid and applying higher pressure to the fluid in each molding cavity.

3,763,301
PROCESS FOR DENSIFYING A MICROPOROUS ELASTOMERIC POLYURETHANE SHEET MATERIAL
Frank P. Civardi, Wayne, N.J., and Charles J. Lattarulo, White Plains, N.Y., assignors to Immont Corporation, New York, N.Y.
Continuation of application Ser. No. 782,096, Dec. 9, 1968. This application Aug. 4, 1970, Ser. No. 60,930
Int. Cl. B29c *15/00, 27/04*
U.S. Cl. 264—321 **24 Claims**



Process for selectively densifying a microporous elastomeric polyurethane sheet material by wetting the sheet with water and pressing it against a hot surface. The microporous elastomeric polyurethane sheet material is wetted with water and then selectively or completely compressed at a temperature well below the "collapse temperature" of the sheet until the sheet is locally or completely densified and then the sheet is dried. The final product is useful in making shoe uppers.

3,763,302
RAPID FUSE CASTING REFRACTORY SHAPES IN LIQUID COOLED METAL MOLDS
Jacques Duchenoy, Guy Gasparini, and Yvon Marty, Vedene, France, assignors to L'Electro-Refractaire, Paris, France
Filed Oct. 9, 1970, Ser. No. 79,439
Claims priority, application France, Oct. 10, 1969, 6934715; May 28, 1970, 7019538
Int. Cl. C04b *35/04, 35/12, 35/62*
U.S. Cl. 264—332 **3 Claims**



A charge of molten refractory oxides, such as mixtures of magnesia and chromium oxide, containing a gas liberating ingredient are poured into a liquid cooled mold via a swirling casting jet in a funnel where small fragments of fused cast scrap of like composition are added and homogeneously mixed with the melt. The solid fragments, the gas liberating ingredient and the liquid cooled metal mold cooperate to cause a solidified shell to form next to the mold surface of such a thickness that the part can be removed from the mold within a few minutes after casting and thereafter cooled outside the mold at a conventional rate without cracking or distortion of shape.

ERRATUM

For Class 424—207 see:
Patent No. 3,763,164

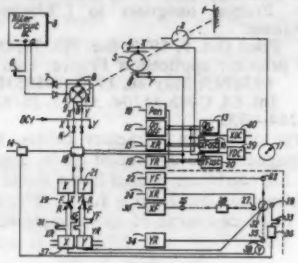
3,763,303
RECOVERY OF MOLYBDENUM FROM SPENT CATALYST
Albert Khuri, Henry F. Barry, and Calvin J. Hallada, Ann Arbor, Mich., assignors to American Metal Climax, Inc.
Filed Dec. 13, 1971, Ser. No. 207,305
Int. Cl. C01g *39/00*
U.S. Cl. 423—54 **16 Claims**

A process for recovering molybdenum from organic residues of spent catalysts comprising subjecting the organic residue to a series of aqueous extractions effecting the removal of the predominant portion of molybdenum therefrom, followed by a recovery of the molybdenum from the aqueous extractant.

3,763,304
SAILING SIMULATOR PROVIDING VISUAL INDICATION OF PERFORMANCE

Bruce Duval, Nassau, Bahamas, assignor to T.P.I. Limited, Nassau, Bahamas

Filed Jan. 14, 1972, Ser. No. 217,794
Int. Cl. G06b 9/06
U.S. Cl. 35—10.2 **11 Claims**



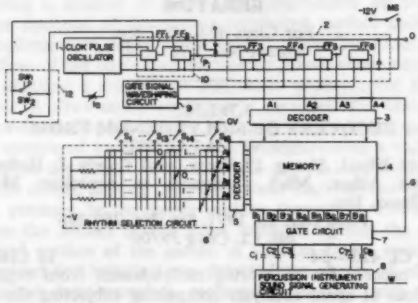
A sailing simulator of the kind having a helm operable by a pupil to provide a visual simulation of the steering movement of a sailing craft being sailed by the pupil in a supposed wind, has a coordinate generator operable to generate coordinates representing the supposed position of the sailing craft at different times, and a plotting device for plotting the coordinates to provide a visual record of the supposed track sailed by the pupil. The coordinate generator may be an electrical or mechanical integrator responsive to velocity and direction signals.

Advantageously the plotting device is fitted to a chart board on the simulator for observation by the pupil. Charts for receiving the plot may carry printed instructions for a lesson, and arrangements may be made so that fitting the chart automatically programs the simulator with steady or variable wind conditions appropriate for the lesson.

3,763,305
AUTOMATIC RHYTHM PLAYING APPARATUS

Akira Nakada, Hamamatsu; Yasuji Uchiyama, and Katsuhiko Hirano, both of Hamakita, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Mar. 29, 1972, Ser. No. 239,178
Claims priority, application Japan, Apr. 1, 1971, 46/19837 (utility model); Apr. 1, 1971, 46/19838 (utility model); Apr. 1, 1971, 46/24073 (utility model); Apr. 2, 1971, 46/20140 (utility model)
Int. Cl. G01h 1/00
U.S. Cl. 84—1.03 **16 Claims**

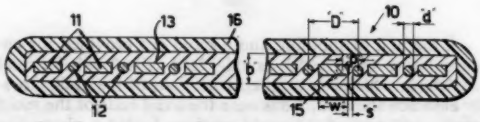


An automatic rhythm playing apparatus has a memory which stores note arrangements of a plurality of rhythms. Pulses corresponding to the note arrangements of specific percussion instrument sounds for a selected rhythm are read out of the memory by cyclically changing address signals and a constant address signal proper to the selected rhythm. Required percussion instrument sound signals are produced from the pulses, and a rhythm sound signal composed of the percussion instrument sound signals is obtained therefrom. The automatic rhythm playing apparatus may have lamp lighting means for indicating rhythm tempo.

3,763,306
FLAT MULTI-SIGNAL TRANSMISSION LINE CABLE WITH PLURAL INSULATION

Joseph Marshall, Trenton, N.J., assignor to Thomas & Betts, Elizabeth, N.J.

Continuation-in-part of Ser. No. 163,199, July 16, 1971. This application Mar. 17, 1972, Ser. No. 235,723
Int. Cl. H01b 7/08
U.S. Cl. 174—115 **16 Claims**

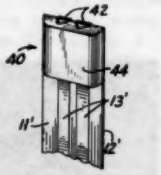


A multi-signal transmission line is formed of a flat cable having a plurality of generally parallel conductors embedded in a dielectric core material, with an insulator jacket encasing the flat cable and being made of a dielectric material having a higher dielectric constant than the dielectric core material of the flat cable. The resulting composite transmission line cable insures that substantially all of the transverse electromagnetic propagation field created by the passage of a fast rise time pulse in a signal conductor is confined to the geometric area of the cable and the cable functions in a manner to greatly reduce the far end line-to-line interference (crosstalk) between the signal conductor and adjacent quiet lines.

3,763,307
ELECTRICAL STRIP CABLE ASSEMBLY

Leo Wolf, 5701 Sheridan Rd., Chicago, Ill.

Filed Dec. 27, 1971, Ser. No. 212,457
Int. Cl. H01r 35/00
U.S. Cl. 174—117 FF **2 Claims**



An electrical strip cable assembly comprising a thin flat strip of flexible insulating material having a pressure-sensitive adhesive coating on a surface thereof for supporting a pair of metal foil conductors bonded thereto and further having a receptacle at an end of the strip for connecting the cable assembly to larger conventional cables. The receptacle includes a pair of terminals respectively connected to each of the conductors with each terminal comprising a generally elongated cylindrical member having a substantially flat surface portion in contact with its corresponding foil conductor. Each ter-

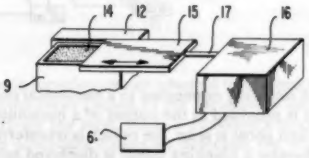
minal is attached to its respective foil conductor by conductive tabs extending from the terminal through the foil conductor and bent to secure the terminal to the conductor. An on/off switch for the cable assembly is provided with a gradually sloping base having a pair of metal conductors on the upper side thereof which are adapted to mate with the foil conductors of the cable.

3,763,308

IMAGE REPRODUCING SYSTEM

Tomiaki Miyata, and Kiichiro Sakamoto, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 20, 1971, Ser. No. 190,867
Int. Cl. H04n 9/02
U.S. Cl. 178—5.2 R **5 Claims**



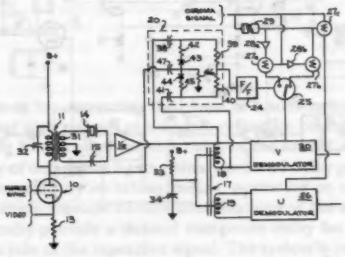
An image reproducing system involves regulating the opening area of a nozzle which sprays image generating material in proportion to the density of an image being scanned while concurrently scanning a support with the aforesaid nozzle to generate the image thereon.

3,763,309

SUBCARRIER REGENERATOR AND PAL IDENTIFIER SYSTEM

Michael J. Palladino, Liverpool, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Feb. 8, 1972, Ser. No. 224,437
Int. Cl. H04n 9/46
U.S. Cl. 178—5.4 P **6 Claims**



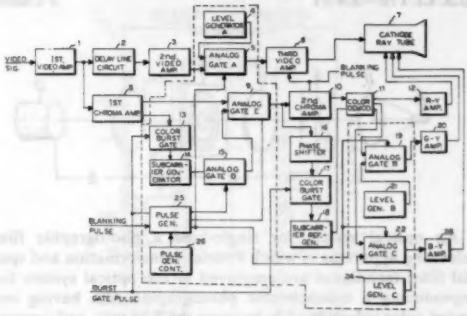
Improved means for applying uniform-phase chrominance information to the "V" demodulator of a PAL system television receiver. An identifier receives burst signals directly from a burst gate, and opposed-phase subcarriers which are also applied to the "V" demodulator. Alternate-polarity pulses outputted by the identifier operate a switch for connecting the demodulator alternately at horizontal line rate to summed chroma information to obtain V chroma information of like phase.

3,763,310

REFERENCE SIGNAL INDICATING APPARATUS FOR A TINT-ADJUSTING IN COLOR TELEVISION RECEIVERS

Takayuki Sagishima; Michio Furuhasi, and Reiichi Sasaki, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 22, 1972, Ser. No. 255,275
Claims priority, application Japan, May 24, 1971, 46/35675
Int. Cl. H04n 9/12
U.S. Cl. 178—5.4 TE **5 Claims**



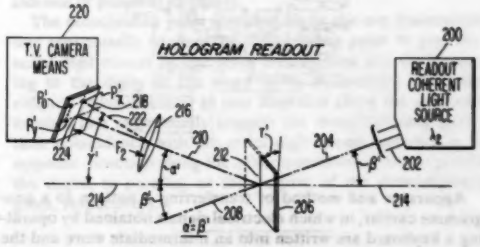
A reference signal indicating apparatus for a tint-adjusting in a color television receiver, said apparatus indicating a reference signal on a television screen for a tint-adjusting whenever viewers want to adjust the tint of color television receiver. This apparatus inserts a pulsed sine wave, having a phase and a frequency identical to those of the color burst signal, into carrier chrominance signals during appropriate period in scanning intervals and displays only red color difference (R–Y) output signals on the television screen during the period. A portion on the screen according to the period has two kinds of hues, one of which changes according to the tint-adjuting. When the portion on the screen has the same hue, the tint-adjusting is correct.

3,763,311

REDUCTION OF NON-LINEAR SPATIAL DISTORTION IN HOLOGRAPHIC SYSTEM EMPLOYING DIFFERENT WAVELENGTHS FOR RECORDING AND PLAYBACK

Robert Alfred Bartolini, Trenton, and Dainis Karlsons, Pennington, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed July 9, 1971, Ser. No. 161,105
Int. Cl. H04n 9/04
U.S. Cl. 178—5.4 **5 Claims**

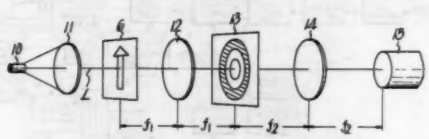


In the recording of a Fraunhofer hologram, with any given fixed angle between the object information and reference beams, spatial non-linear distortion is minimized by properly choosing the inclination of the object information beam with respect to the recording medium as a function of the recording wavelength, the focal length of a converging lens employed in recording, the playback wavelength, and the focal length of an imaging lens employed in playback.

3,763,312
OPTICAL SYSTEM FOR PHOTOGRAPHIC FILM TELEVISING APPARATUS

Masahide Yoneyama, Kawasaki-shi, Japan, assignor to Nippon Columbia Kabushikikaisha, 125, Minato-ku, Tokyo, Japan

Filed Dec. 8, 1971, Ser. No. 205,808
Claims priority, application Japan, Dec. 12, 1970, 45/110907; Dec. 19, 1970, 45/114885; Dec. 21, 1970, 45/115481
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 ST 9 Claims

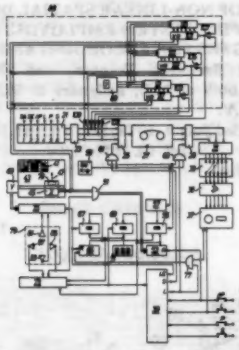


An optical system for single-tube a photographic film televising apparatus in which Fourier transformation and spatial filter techniques are employed in the optical system for reproducing a monochrome photographic film having encoded color information to improve the S/N ratio and remove beat resulting from the construction of an encoder, so as to produce a high-grade reproduced television picture.

3,763,313
APPARATUS AND METHOD OF TRANSFERRING A PATTERN TO A PROGRAMME CARRIER

Peter Doslik, Bonlanden, Germany, assignor to Firm Franz Morat GmbH, Stuttgart-Vaihingen, Germany

Filed Apr. 19, 1972, Ser. No. 245,407
Claims priority, application Germany, Apr. 21, 1971, P 21 19 291.6
Int. Cl. G11b 7/00
U.S. Cl. 178—6.6 R 18 Claims

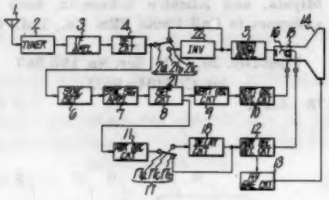


Apparatus and method of transferring a pattern to a programme carrier, in which electrical signals obtained by operating a keyboard are written into an intermediate store and the intermediate store is read out for the production of the programme carrier, wherein after the writing in of each line of the pattern is completed, the intermediate store is read out without loss of information and the information read out is transferred to the programme carrier, and each line of the pattern subsequent to the first line is written into the intermediate store by altering the information of those points of the stored line which have a pattern alteration as compared with the corresponding points of the preceding line.

3,763,314
GHOST IDENTIFICATION MEANS IN A TELEVISION RECEIVER

Yukio Murakami, Yokohama, Japan, assignor to Leader Denski Kabushikikaisha, Yorkohama-shi, Kanagawa-ken, Japan

Filed Feb. 2, 1972, Ser. No. 222,743
Claims priority, application Japan, Feb. 15, 1971, 46/8076
Int. Cl. H04n 5/14, 5/44
U.S. Cl. 178—7.3 R 3 Claims

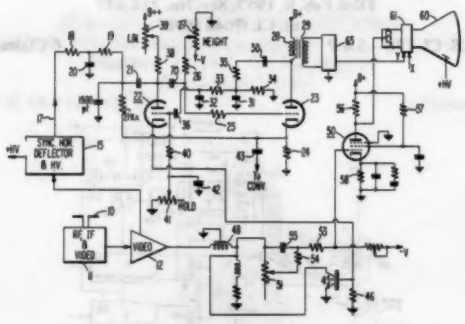


A switch normally connected to a horizontal oscillation output circuit is provided at the output of a horizontal oscillation circuit. When ghost is seen, the switch is transferred to a delay circuit, whereby a blanking signal is displayed substantially at the center of a CRT surface. Thus, the ghost is appreciably identified. A further switch normally connected to a video amplifier circuit is provided at the output of a detection circuit. Transferring of the switch causes a video signal to be phase inverted. As a result, the ghost can be appreciably identified.

3,763,315
BLANKING CIRCUITS FOR TELEVISION RECEIVERS

Marvin Neil Norman, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed July 22, 1971, Ser. No. 165,099
Int. Cl. H04n 5/44
U.S. Cl. 178—7.5 R 6 Claims



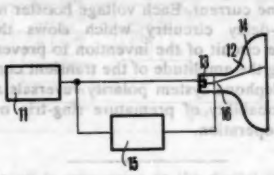
There is disclosed a blanking circuit utilizing a transistor having its emitter electrode coupled to a point of reference potential and its collector electrode coupled to a point in the video amplifier. The base electrode is responsive to a signal developed only during retrace time by means of a current flowing through a discharge device associated with a deflection oscillator. The base electrode of the transistor is forward biased by this retrace signal to thereby saturate the collector to emitter path of the transistor and cause the video amplifier to produce a signal capable of blanking a kinescope employed in said receiver.

3,763,316

DYNAMIC FOCUSING CIRCUITS FOR CATHODE RAY TUBES

Eiichi Yamazaki, Ichihara; Yoshihiko Miyata, Mobara, and Kosuke Kitamura, Yokohama, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed July 31, 1972, Ser. No. 276,577
Claims priority, application Japan, Aug. 4, 1971, 46/69127
Int. Cl. H04n 3/18; H01j 29/56
U.S. Cl. 178—7.5 R 4 Claims



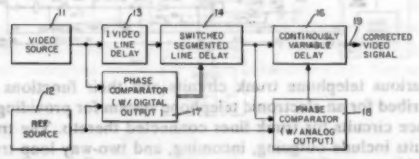
In a dynamic focusing circuit adapted to compensate for the blooming of the focus caused by the variation in the beam current of a cathode ray tube, there is provided a peak value detector which comprises means for detecting the white peak of a video signal from a video signal amplifier, means for forming a compensation signal of a low frequency corresponding to the white peak value, and means for supplying the compensation signal to the focusing electrode of the cathode ray tube.

3,763,317

SYSTEM FOR CORRECTING TIME-BASE ERRORS IN A REPETITIVE SIGNAL

Charles H. Coleman, Jr., Belmont, and Robert P. MacKenzie, Menlo Park, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Apr. 1, 1970, Ser. No. 24,666
Int. Cl. H04l 7/00
U.S. Cl. 178—69.5 TV 19 Claims



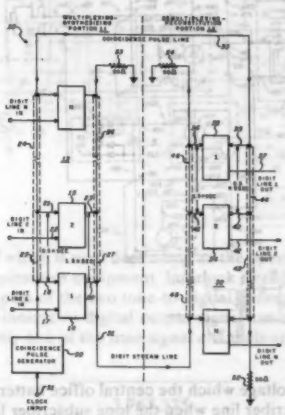
A system for correcting the phase of a substantially repetitive signal with respect to a known reference timing signal by providing a controlled variable delay of the former, in which a plurality of delay lines having binary ordered delay periods are interconnected by switching means, operating on command, to selectively cascade certain combinations of the delay lines and thereby provide a desired composite delay for each successive cycle of the repetitive signal. The system is particularly suited for providing extended delay range capability for synchronizing the phase of a television signal with a local reference signal. For this purpose, the total composite delay is selected to equal a basic period of repetition of the signal and the switching means interconnecting the delay lines is conditioned to operate during a synchronizing pulse waveform carried by the video signal, thereby avoiding the introduction of undesirable switching transients into those portions of the signal carrying analog picture information. In combination with the switched, binary ordered delay lines, circuitry is shown for developing a digital word signal representing the phase error for each cycle of the repetitive signal.

3,763,318

TIME DIVISION MULTIPLEXER-DEMULTIPLEXER FOR DIGITAL TRANSMISSION AT GIGAHERTZ RATES

Gerald F. Ross, Lexington; Leon Susman, Sudbury, and Ellis E. Eves, II, Nabnasset, all of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,976
Int. Cl. H04j 3/04
U.S. Cl. 179—15 A 9 Claims



The invention is a time division multiplexing-demultiplexing system for converting the parallel digits of a data word into serial format, transmitting the serial digits on a transmission line and reconstituting the parallel data word from the serially transmitted digits thereof. The multiplexing portion of the system comprises a sequence of coincidence gates adapted to receive the parallel digits, respectively, of the data word to be transmitted. The gates are coupled to equally spaced points along a transmission line such that a coincidence pulse traveling along the line sequentially causes the gates to provide output pulses in accordance with the values of the digits applied thereto respectively. The outputs of the gates are applied to equally spaced points along another transmission line.

The demultiplexing portion of the system comprises another sequence of coincidence gates each having two inputs connected to the other ends of the two transmission lines, respectively, the inputs of the respective gates being connected at equally spaced points along the two lines. Each demultiplexing gate has an output that provides a pulse upon time coincidence of pulses at its inputs.

The coincidence pulse traveling along the one transmission line sequentially triggers the multiplexing gates to provide a serial digit stream on the other transmission line corresponding to the digits of the word to be transmitted. The coincidence pulse traveling in one direction along the one transmission line sequentially triggers the demultiplexing gate in time coincidence with the serial digit stream traveling in the opposite direction along the other transmission line to provide the digits, in parallel, at the outputs of the demultiplexing gates, respectively.

3,763,319

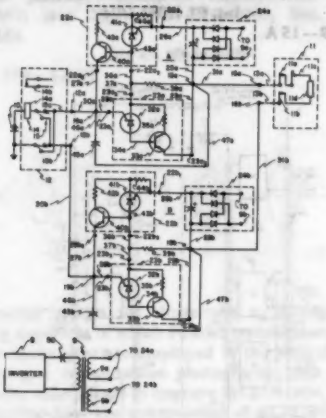
IMPEDANCE RESPONSIVE VOLTAGE BOOSTER CIRCUIT FOR TELEPHONE SYSTEMS

Charles W. Chambers, Jr., Amherst, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Feb. 22, 1971, Ser. No. 117,627
Int. Cl. H04g 1/28
U.S. Cl. 179—16 F 28 Claims

The invention includes a circuit for additively increasing the d-c operating voltage of long subscriber lines in telephone

systems utilizing reverse battery supervision. A plurality of switching circuits are disposed in series with respective conductors of a subscriber line to maintain voltage booster sources in series, power-aiding relationship between a central office battery and a long subscriber line. The circuit of the invention also prevents the voltage booster sources from in-



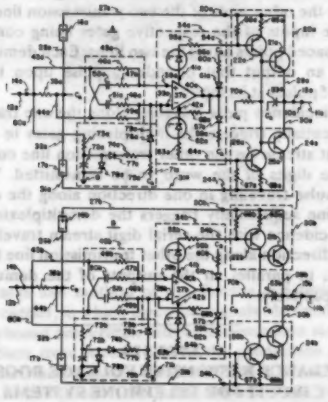
creasing the voltage which the central office battery applies to the long subscriber line when the long subscriber line is open-circuited at the subscriber station as, for example, during dial pulse interruptions. This assures that the voltage boosting circuitry can increase the level of current flowing through the long subscriber line without impairing the dialing characteristics of that line.

3,763,320

VOLTAGE BOOSTER CIRCUIT HAVING TEST-THROUGH CHARACTERISTICS

Charles W. Chambers, Jr., Amherst, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Oct. 20, 1971, Ser. No. 190,855
Int. Cl. H04g *1/28*
U.S. Cl. 179—16 F **29 Claims**



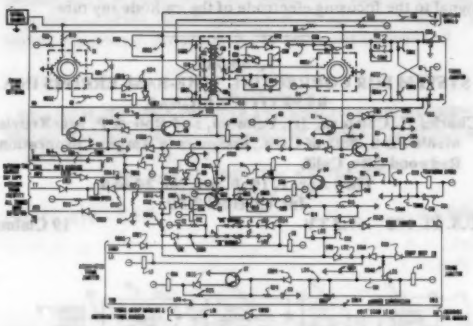
A circuit for increasing the magnitude of subscriber line current flow in a variety of types of telephone systems. A voltage booster network is connected in series with at least one conductor of a subscriber line. Each voltage booster network includes circuitry for conducting subscriber line current in first and second directions therethrough. D-C boost voltage supply means is connected to each booster network to additively increase the flow of subscriber line current therethrough. Each voltage booster network includes control circuitry which causes that network to exhibit a boost voltage-line current characteristic having a low current region wherein substantially no boost voltage is produced allowing accurate line testing therethrough, a middle current region wherein the boost voltage increases substantially linearly with line current affording pulse adjustment and a high current region wherein the boost voltage remains substantially constant with line current to provide voltage boosting which is stable with respect to variations in line current. Each voltage booster network also includes time-delay circuitry which slows the dynamic response of the circuit of the invention to prevent the latter from increasing the amplitude of the transient currents which accompany telephone system polarity reversals and thereby reduce the probability of premature ring-trip or other undesirable relay operation.

3,763,321

TRUNK CIRCUITS FOR ELECTRONIC TELEPHONE SYSTEMS

George R. Bergquist, and Matyas Hugyecz, both of Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Nov. 29, 1971, Ser. No. 202,788
Int. Cl. H04m *7/00*
U.S. Cl. 179—18 AH **10 Claims**



Various telephone trunk circuits and their functions are described for an electronic telephone system for providing interface circuits for trunk lines connected thereto. The trunk circuits include outgoing, incoming, and two-way loop trunk circuits, and outgoing, incoming, and two-way E and M signalling trunk circuits. Provisions are included for seizure of the trunk circuit by the trunk scanner, the transmission of supervisory signals for completing the connections, and the transmission of audio signals therethrough.

3,763,322

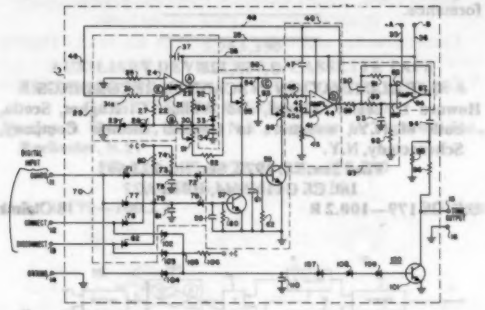
DIGITAL-TO-TONE CONVERTER UTILIZING A RELAXATION OSCILLATOR

Hernando Javier Garcia, San Francisco, Calif., and Benjamin Roger Peek, Garland, Tex., assignors to Integrated Systems Technology, Inc., garland, Tex.

Filed Oct. 1, 1971, Ser. No. 185,745
Int. Cl. H04b *7/00*
U.S. Cl. 179—41 A **12 Claims**

A relaxation oscillator is formed by a Schmitt trigger circuit and an operational integrator circuit interconnected to form an oscillatory feedback loop. A diode switching network is constructed to receive a plural-bit digital input signal and to modify a circuit parameter in the oscillator feedback loop to adjust the frequency of oscillation in accordance with the coding of the digital input signal. An active low-pass filter circuit

is connected to the output of the operational integrator circuit and supplies a sinusoidal tone signal to an output circuit. A

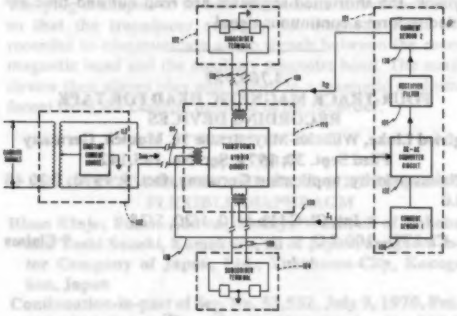


switching circuit is responsive to the digital input signal for disabling the output circuit except during the occurrence of predetermined digital code values.

3,763,323
CURRENT SPLITTING ARRANGEMENT

Uno Randmere, and Morris A. Suntop, both of Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,297
Int. Cl. H04j 1/10
U.S. Cl. 179—77 **15 Claims**



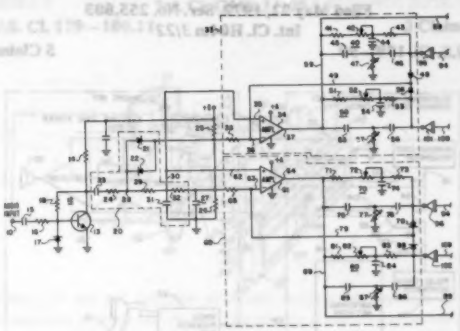
A substantially constant direct current (DC) is provided in each branch or spur transmission line connected to a primary transmission line by a current splitter circuit interconnecting the lines. The current splitter circuit includes a DC-to-AC converter-filter circuit for providing a first direct current output, and a direct current path through the inverter for providing a second direct current output. Separate sensor circuits are connected to each of the current splitter outputs to detect faults, such as an open circuit or high resistance, and apply a compensating load to maintain proper operation.

3,763,324
TONE DETECTOR SYSTEM

Hernando Javier Garcia, San Francisco, Calif., and Benjamin Roger Peek, Garland, Tex., assignors to Integrated Systems Technology, Inc., Garland, Tex.

Filed Oct. 1, 1971, Ser. No. 185,518
Int. Cl. H04b 7/00
U.S. Cl. 179—84 VF **17 Claims**

There is disclosed a tone detector system which is particularly useful in communications systems for detecting audio-frequency signalling tones transmitted from one station to another. The disclosed tone detector system includes an amplifier followed by a limiter. The limiter drives a pair of signal channels each of which includes a tuned amplifier followed by a tone-to-digital converter. The tuned amplifier in each channel is provided with a pair of frequency selective filters, one or

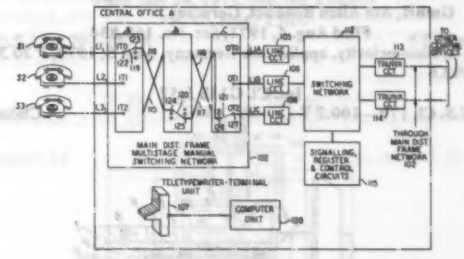


the other of which is used depending on the operating mode of the communications equipment. Interlock circuitry cross couples the outputs of the two tone-to-digital converters so that a tone signal indicative digital output signal can appear at the output of only one of the tone signal channels at any given instant.

3,763,325
MAIN DISTRIBUTING FRAME MANUAL SWITCHING NETWORK ARRANGEMENT

Joseph George Kapel, Middletown, N.J.; Wayne Eugene Nichols, Granville, Ohio, and Charles William Zebe, New Shrewsbury, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 29, 1971, Ser. No. 158,012
Int. Cl. H04q 3/64
U.S. Cl. 179—98 **1 Claim**



A telephone system comprising conventional station apparatus (outside plant) and associated conductors and conventional central office equipment (inside plant) and associated conductors is provided with a main distributing frame cross-connection field which is modified by the serial insertion of a multistage manual switching network between the cross-connection field input and output terminals. The network consists of a plurality of serially related switching stages comprising a plurality of terminals each of which are exclusively interconnected with respective terminals in a preceding stage in a previously wired predetermined pattern. Terminal strips are employed at each stage in lieu of the more conventional network stage switches. Connection through each stage is effected by placement of a short double ended cord, thereby interconnecting any selected input terminal and output terminal of a particular switch.

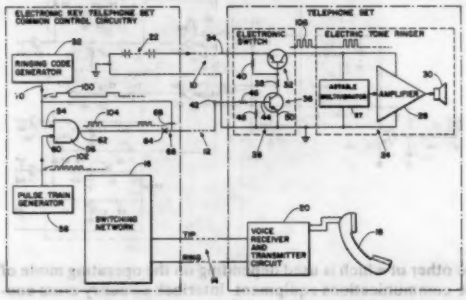
Independent data processing equipment is employed to maintain in memory the status of each connection and to indicate, upon request, the cord placements (and removals) required to perform the main distributing frame function.

3,763,326

TELEPHONE AUDIO SIGNALLING ARRANGEMENT

Tapio Henrikki Murto, and Kenneth Douglas Emslie, both of Ottawa, Ontario, Canada, assignors to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed May 22, 1972, Ser. No. 255,803
Int. Cl. H04m 3/22
U.S. Cl. 179—99 5 Claims



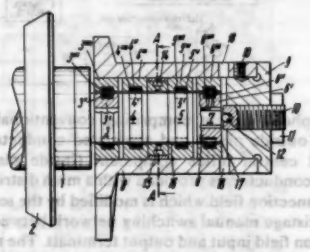
A telephone signalling system for signalling a station set in a key telephone system, said signalling system including an electronic tone-ringer which generates a tone at a first audio frequency when connected to a conventional 20Hz ringing supply. When the electronic tone-ringer is energized with an audio frequency voltage at an audio frequency greater than the first audio frequency, in lieu of the conventional 20Hz ringing supply, a different tone is generated by the electronic tone-ringer.

3,763,327

MAGNETIC HEAD WHEEL ROTOR AND TRANSFORMER ASSEMBLY WITH ANTI-ROTATION LOCKING MEANS

Manfred Hescher, Weiterstadt, Germany, assignor to Fernseh GmbH, Am Alten Bohnhof, Germany

Filed Aug. 4, 1971, Ser. No. 168,834
Claims priority, application Germany, Aug. 5, 1970, P 20 38 893.6
Int. Cl. G11b 5/52
U.S. Cl. 179—100.2 T 4 Claims



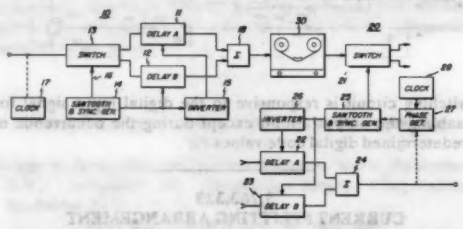
A device for recording signals on a magnetic tape or for reproducing signals therefrom of the type where a rotating head wheel is provided with at least one magnetic pick-up head. Such a device requires a signal repeater or transformer including a fixed and a rotating magnetic core interconnected by associated coils. The fixed part of the device including the fixed magnetic cores is normally fixed against rotation but may be unlocked to permit rotation so that the fixed portion of the device may be rapidly removed and exchanged. Further, the fixed portion of the device including the fixed magnetic cores is disposed about the rotating portion to facilitate removal thereof. This makes it possible to exchange the coils between associated pairs of magnetic cores to change the transformer ratio or to change the fixed portion of the device to permit reproducing or recording signals for optimum performance.

3,763,328

GAP ELIMINATION IN SCANNED RECORDINGS

Howard L. Lester, Alpaus, and William C. Hughes, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 28, 1972, Ser. No. 221,691
Int. Cl. G11b 5/44; H04n 1/22
U.S. Cl. 179—100.2 R 8 Claims



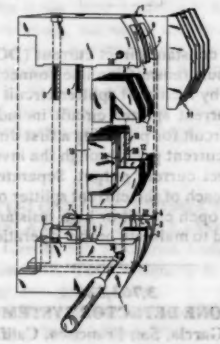
In scanning signal recording systems, the information gap introduced at the end of each scan can be eliminated by utilizing time compression and expansion of the signal being recorded. During recording, the input signal is divided into time segments and time compressed into a new segment having a duration shorter than the length of a scan. During playback, the shortened segments are read out and time expanded to form a continuous signal.

3,763,329

FOUR-TRACK MAGNETIC HEAD FOR TAPE RECORDING DEVICES

Siegfried Linke, Wilhelm-Mayrstrasse 1c, Munich, Germany

Filed Sept. 30, 1971, Ser. No. 185,142
Claims priority, application Germany, Oct. 5, 1970, P 20 48 868.0
Int. Cl. G11b 5/10, 5/20, 5/28
U.S. Cl. 179—100.2 C 9 Claims



A four-track magnetic head for tape recording devices, particularly for cassette tape recording devices, which consists of two mainly identically designed housing parts and in which the housing exhibits inside a centre cross-piece being perpendicular to the magnet gaps and one double-track magnet system is pressed onto the centre cross-piece from each side and in

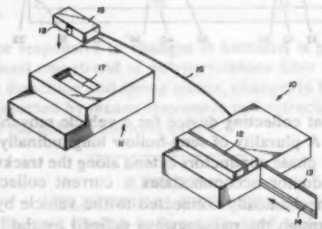
which each double-track magnet system contains two magnet coils which are both wound onto a holder which has two square frames at its ends and in which hook-shaped magnetic sheets are inserted with their base legs in the frames.

3,763,330

AUXILIARY DEVICE FOR A CASSETTE TAPE RECORDER INCLUDING A PLUG CONFORMED AS A CASSETTE FOR INTERCONNECTION

Stanley S. Fulwiler, Hilton, N.Y., assignor to Tapecon, Inc., Rochester, N.Y.

Filed June 28, 1971, Ser. No. 157,330
Int. Cl. G11b *23/04, 25/10*
U.S. Cl. 179—100.2 Z 3 Claims



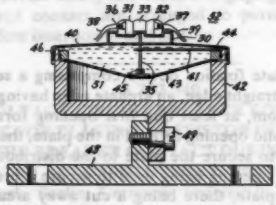
An auxiliary device for a cassette tape recorder has an auxiliary magnetic head and an independent drive for moving a magnetic record medium past the head. The auxiliary is connected to a cassette tape recorder by a plug having a transducer in electrical circuit with the auxiliary magnetic head. The plug is shaped to fit into the cassette slot of the recorder so that the transducer engages the magnetic head of the recorder to communicate audio signals between the recorder magnetic head and the auxiliary magnetic head. The auxiliary device then allows play and record in a magnetic medium different from the cassette medium of the recorder.

3,763,331

MAGNETIC TRANSDUCER HEAD SUPPORTED BY FLEXIBLE DIAPHRAGM

Hisao Kinjo; Fumio Akuwa; Yoshiyo Wada, all of Yokohama, and Toshi Suzuki, Kamakura, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama-City, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 53,552, July 9, 1970, Pat. No. 3,673,352. This application Dec. 28, 1971, Ser. No. 212,927
Claims priority, application Japan, Dec. 29, 1970, 45/127082; July 11, 1969, 44/54578
Int. Cl. G11b *5/60*
U.S. Cl. 179—100.2 P 2 Claims



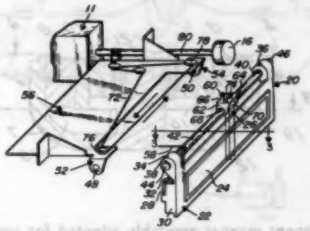
A magnetic head assembly comprises two resilient film-like members held in tension over a drum-shaped support. A magnetic head holder and at least one head core are provided on an upper resilient member. The head core can follow the variation of contact caused by an uneveness of the magnetic surface of a magnetic medium.

3,763,332

DIAL POINTER ASSEMBLY FOR A RADIO/TAPE PLAYER

William J. Race, Itasca, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 12, 1972, Ser. No. 252,882
Int. Cl. G11b *31/00*
U.S. Cl. 179—100.11 3 Claims



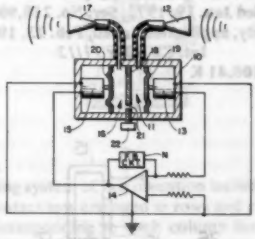
A radio dial-door for a combination radio/tape player device has spaced front and rear walls to form a channel therebetween. The door is mounted at opposite ends on a rod extending therebetween. A dial pointer is mounted on the rod for pivotal and longitudinal movement thereon. A bracket also mounted on the rod for longitudinal movement therealong captures the pointer, the latter thereby being movable with the bracket along the rod. A cord attached to the bracket and a tuner control shaft of the radio portion of the device, moves the bracket and pointer with respect to indicia on the door in response to the rotation of the shaft, to indicate the radio frequency setting to which the radio is tuned.

3,763,333

ACOUSTIC FEEDBACK STABILIZATION SYSTEM PARTICULARLY SUITED FOR HEARING AIDS

Abraham Lichowsky, Los Angeles, Calif., assignor to Ambitex Company, Santa Monica, Calif.

Filed July 24, 1972, Ser. No. 274,607
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 R 5 Claims



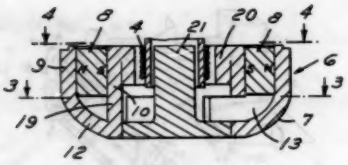
Linearity is increased and distortion reduced in a miniature acoustic amplifying system by providing an acoustically communicating passage between the microphone and speaker diaphragms to define a negative acoustic feedback loop for the amplifying system. The negative acoustic feedback is feasible because of the miniature arrangement itself of the microphone and speaker wherein the distance of the acoustic passage can be made a small fraction of the wave length of the highest frequency in a given frequency range to be amplified. An adjustment is provided for changing the acoustic coupling between the microphone and speaker diaphragms to thereby adjust the negative feedback loop. This adjustment can also serve as a volume control and the entire system is highly suitable for use in hearing aids wherein miniature microphones and speakers are utilized in close physical proximity.

3,763,334

MAGNET ASSEMBLY

Rollin J. Parker, Greenville, Mich., assignor to General Electric Company, N.Y.

Filed Jan. 21, 1972, Ser. No. 219,718
Int. Cl. H04r 9/06
U.S. Cl. 179—115.5 R 4 Claims



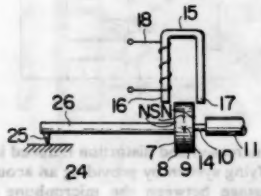
A permanent magnet assembly adapted for use in a loudspeaker, particularly one having a low-flux density permanent magnet, comprising a one-piece return path element having two ring-shaped concentric segments, between which is fitted a ring-shaped, radially oriented permanent magnet. The two concentric segments of the return path are open at the axial top portion thereof and are joined at the lower axial portion thereof by a bridge member which is circumferentially divided except for a small portion thereof. The radially inward segment of the return path has an upper axial portion which is wider than the remaining portion of the segment to concentrate the magnetic flux at the air gap. A centrally disposed pole piece fits within the return path-permanent magnet assembly to complete the magnetic circuit of the permanent magnet loudspeaker.

3,763,335

PICKUP CARTRIDGE WITH MAGNET ARMATURE HAVING OPPOSITE AXIAL SIDES OF LIKE POLARITY AND CENTRAL PORTION OF OPPOSITE POLARITY

Katsuhiko Morita, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 19, 1972, Ser. No. 218,983
Claims priority, application Japan, Feb. 23, 1971, 46/8791
Int. Cl. H04r 11/12
U.S. Cl. 179—100.41 K 13 Claims



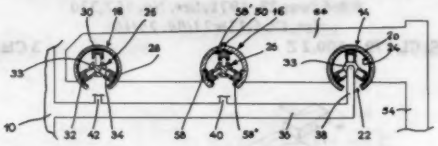
A small-sized light stylus pressure pickup cartridge with superior characteristics having an armature comprising a permanent magnet plate with both of its sides magnetized in opposite polarity from its central portion, a substantially inverted channel-shaped yoke or yokes arranged in the proximity of the outer sides of the magnet, a stylus arm fixed on the magnet and a reproducing stylus; characterized in that movement of the stylus is transmitted to the magnet thereby obtaining a corresponding electrical output from a coil or coils wound on a yoke or yokes.

3,763,336

POLYPHASE CURRENT COLLECTING DEVICE FOR A VEHICLE MOVING ALONG A TRACKWAY

Pierre Charamel, Les Cotes de Sassenage, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France

Filed Jan. 12, 1972, Ser. No. 217,200
Claims priority, application France, Jan. 22, 1971, 7102909
Int. Cl. B60l 5/38
U.S. Cl. 191—49 3 Claims



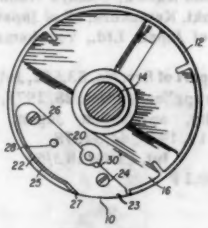
A current collecting device for a vehicle movable along a trackway. A plurality of semi-hollow longitudinally cut away cylindrical phase conductors extend along the trackway. Each phase conductor accommodates a current collecting head which is mechanically connected to the vehicle by rods extending through the passageways defined by the lips of the cut away conductors.

3,763,337

BREAKER PLATE FIXATION DEVICE FOR AUTOMOTIVE DISTRIBUTORS

Stanley C. Huslin, 5534 Large St., Philadelphia, Pa.

Filed Aug. 29, 1972, Ser. No. 284,688
Int. Cl. H01h 9/00
U.S. Cl. 200—19 R 1 Claim



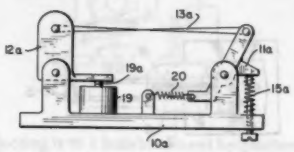
A breaker plate fixation device comprising a semicircular plate having a straight edge, an arcuate edge having a wing extending therefrom, at least one first opening formed in the plate and a second opening formed in the plate, the first opening being used to secure the plate to the distributor housing and the second opening being used to secure a breaker plate to the fixation plate, there being a cut away area along the straight edge to allow passage of wires with the arcuate edge conforming to the distributor housing. The arcuate edge conforms to the circular interior wall of the distributor housing and the wing extending from the arcuate edge is received in a slot in the distributor housing. Once the fixation plate is secured to the distributor housing and the breaker plate, the fixation plate acts to hold the breaker plate immovable.

3,763,338

POLYPYRROLIDONE FIBER FOR ACTIVATING SENSOR MEANS IN A HUMIDITY RESPONSIVE DEVICE

Job R. Tozer, Dallas, Tex., assignor to Airac Corporation, Stamford, Conn.

Filed Jan. 6, 1972, Ser. No. 215,740
Int. Cl. H01h 35/42
U.S. Cl. 200—61.06 10 Claims



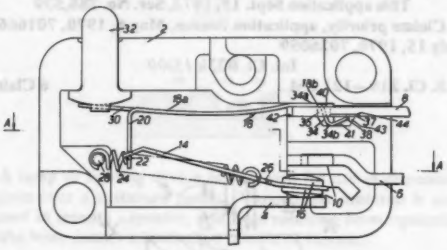
A device responsive to changes in humidity is provided in which at least one strand of polypyrrolidone fiber is disposed between a stanchion and spring means, changes in the humidity being detected by means responsive to contraction and expansion of the polypyrrolidone strand.

3,763,339

ELECTRICAL SWITCHES

Raymond Holmes, Chester-le-Street, England, assignor to Burgess Micro Switch Company Limited, Gateshead County, Durham, England

Filed Aug. 1, 1972, Ser. No. 277,138
Claims priority, application Great Britain, Aug. 3, 1971, 36,475/71
Int. Cl. H01h 13/28
U.S. Cl. 200—67 B 14 Claims



A snap-action switch has a contact arm pivotable on an actuator member and engaged by a spring that moves through an over-centre position when the actuator member is deflected, to switch the contact arm. The actuator member is of elongate form and an end remote from its pivot engagement with the contact arm is frictionally engaged with a fixed, externally directed contact. The member is wedged with said contact in a slot of the switch casing and the interengaging portions of said member and contact are arranged to permit their pre-assembly before insertion in said slot.

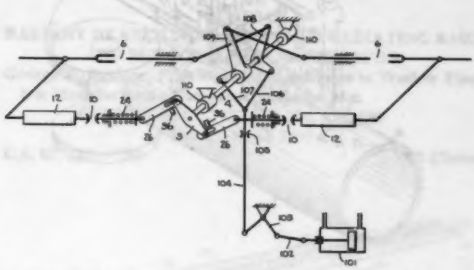
3,763,340

HIGH-VOLTAGE CIRCUIT BREAKER EQUIPPED WITH MEANS FOR PLACING A RESISTOR IN PARALLEL WITH THE BREAKER CONTACT DURING BREAKER CLOSING OPERATIONS

Dieter Noack, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 3, 1972, Ser. No. 240,514
Int. Cl. H01h 33/60
U.S. Cl. 200—148 D 17 Claims

A high-voltage circuit breaker has a primary switch, an auxiliary switch and a resistor connected in series with said auxiliary switch. The serial combination of the resistor and the auxiliary switch is in parallel with the primary switch. The primary switch and the auxiliary switch have a common mechanical drive movable to various positions for actuating the switches. The auxiliary switch has a spring for holding it in the open position and a force-coupled connector is provided for



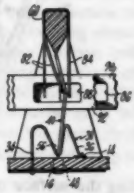
force-coupling the drive to the auxiliary switch. The connector is disengageable from the drive in dependence upon the position of the drive. When the breaker operates, the auxiliary switch closes prior to the closing of the primary switch and opens again after the primary switch is closed.

3,763,341

SWITCHING SYSTEM

Grant N. Willis, Bristol, Conn., assignor to Frederick H. Clymer, Jr., Harwinton; John R. Whiting, Bloomfield, both of Conn.; Mack C. Jones, Longport, N.J.; Robert E. Dallon and Warren E. Dion, both of Bristol, Conn., part interest to each

Division of Ser. No. 40,760, May 27, 1970, Pat. No. 3,662,301.
This application Mar. 9, 1972, Ser. No. 233,046
Int. Cl. H01h 3/00
U.S. Cl. 200—153 G 16 Claims



The switching system of this invention includes a plurality of coordinate contact sets arranged in rows and columns, actuating means corresponding to each column for selectively actuating a contact selector bar corresponding to each row when the contact selector bar has been operated to transmit contact closing and opening forces thereto, and a contact operator at each coordinate operable by the selector bar to effect movement and an automatic latching of a selected contact set.

3,763,342

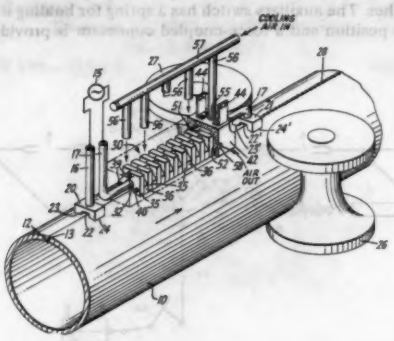
AIR COOLED MAGNETIC STRUCTURE FOR USE IN HIGH FREQUENCY WELDING AND HEATING

Edgar D. Oppenheimer, Westchester County, N.Y., assignor to Thermatool Corp., New Rochelle, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,755
Int. Cl. B23k 31/06
U.S. Cl. 219—59 9 Claims

A magnetic structure for use in high frequency electrical heating to restrict the width of the path of current flow. Struc-

ture is comprised of stack of substantially identical irregularly shaped laminations successively arranged in misalignment to



form radiating surfaces and transversely extending passages along exterior portion of structure. Coolant is passed over said exterior portion to cool stack.

3,763,343

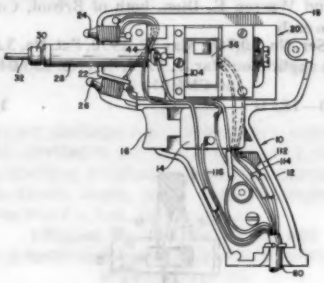
METAL TREATING TOOL

Isadore J. Rocklin, 3240 Douglas St., Sioux City, Iowa

Continuation-in-part of Ser. No. 76,084, Sept. 28, 1970, abandoned. This application July 13, 1972, Ser. No. 271,388

Int. Cl. B23k 9/16

U.S. Cl. 219—76 **6 Claims**



A method for treating the surface of a workpiece involves vibrating a consumable electrode such as tungsten carbide toward and away from the surface while maintaining the electrode and workpiece connected across a capacative discharge circuit which is continuously supplied by a d.c. potential source. The d.c. open circuit voltage of the supply, the charging current for the capacative discharge circuit and the capacitance of the discharge circuit are controlled to prevent electrode consumption.

3,763,344

INDUSTRIAL ROBOT WITH A WELDING GUN

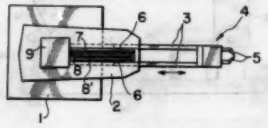
Yoshio Okabe, Kawasaki, and Kenji Yamane, Akashi-shi, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, and Dengensha Manufacturing Co., Ltd., Kanagawa, both of Japan

Filed July 10, 1972, Ser. No. 270,429

Int. Cl. B23k 11/24; H01r 41/00

U.S. Cl. 219—116 **6 Claims**

An industrial robot having a base, a welding body supported on the base, a reciprocating, movable arm supported by the welding body, and a welding gun supported on the outer end of the arm. The welding transformer is secured to the stationary welding body and is provided with a pair of secondary conductors extending parallel to each other and the arm. A pair of current conducting plates are secured to the arm and connected to the ends of a pair of conductors connected to the gun. The pair of current conducting plates slidably contact the pair of secondary conductors. One of the pair of secondary conductors is connected to the welding transformer such that



the impedance in conducting the welding current through the current conducting plate, in sliding contact therewith, is reduced as the arm is moved away from the transformer, while the other secondary conductor is connected to the transformer such that the impedance is increased as the arm is moved away from the transformer. The resultant impedance of the secondary conductors is thereby held constant regardless of the movement of the arm during the welding operation.

3,763,345

METHOD OF ELECTRONIC BEAM WELDING

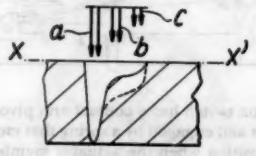
Jacques Andre Stohr, Hures-aur Ivette, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Continuation of Ser. No. 140,212, May 4, 1971, abandoned. This application Sept. 13, 1972, Ser. No. 288,539

Claims priority, application France, May 6, 1970, 7016664; July 15, 1970, 7026059

Int. Cl. B23k 15/00

U.S. Cl. 219—121 EM **6 Claims**



Electron beam welding uses at least one electron beam having components of constant specific power, measured in the direction opposite to the displacement of said beam, which vary between predetermined values within the electron impact area.

3,763,346

METHODS OF SHAPING RESHARPENING OR CLEANING TIPS

Michael Drechsler, Marseille, and Jean-Paul Prulhiere, Courbevoie, both of France, assignors to L'Agence Nationale De Valorisation De La Recherche (Anvar), Courbevoie, France

Filed July 29, 1971, Ser. No. 167,245

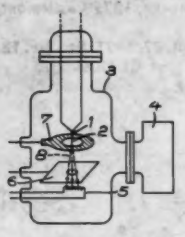
Claims priority, application France, July 31, 1970, 7028388

Int. Cl. B23k 15/00

U.S. Cl. 219—121 EM **4 Claims**

This invention relates to a method of shaping, resharpening, or cleaning tips, particularly the ends of filaments used as elec-

trodes emitting electric particles by field effect. This process consists in the steps of placing said tip under a high vacuum



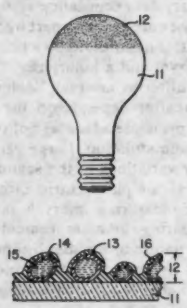
and of subjecting it to a bombardment by electrons so that the temperature of the tip is lower than the fusion temperature.

3,763,347

VAPOROUS LAMP

John G. Whitaker, Englewood, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Apr. 13, 1972, Ser. No. 243,758
Int. Cl. F22b *1/28*
U.S. Cl. 219—275 **5 Claims**



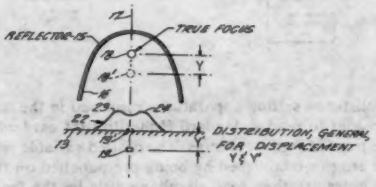
A lamp or lighting device is disclosed for use in dispensing vapors over a sustained period. Vaporizable material is contained in minute capsules; and heat resulting from operation of the lamp causes a controlled release of vapors.

3,763,348

APPARATUS AND METHOD FOR UNIFORM ILLUMINATION OF A SURFACE

Bernard J. Costello, Ringoes, N.J., assignor to Argus Engineering Company, Inc., Hopewell, N.J.

Continuation of Ser. No. 774,898, Nov. 12, 1968, abandoned. This application Jan. 5, 1972, Ser. No. 215,658
Int. Cl. H05b *1/00*
U.S. Cl. 219—347 **5 Claims**



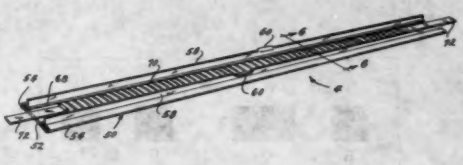
A technique for irradiating a substantially large surface area so as to obtain substantially uniform radiation density over the entire surface area to be irradiated through the use of prismatic elements including elliptical shaped reflector means and a line radiation source, wherein the line radiation source and the image plane of the surface area to be irradiated are positioned at predetermined locations displaced from the normal primary and secondary focal points to cause the entire surface area to be irradiated in a substantially uniform manner.

3,763,349

RADIANT HEATER WITH IMPROVED RADIATING BARS AND MOUNTING MEANS THEREFOR

George B. Desloge, Frontenac, Mo., assignor to Watlow Electric Manufacturing Company, St. Louis, Mo.

Filed July 17, 1972, Ser. No. 272,385
Int. Cl. H05b *3/06*
U.S. Cl. 219—536 **12 Claims**



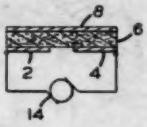
A radiant heater which includes a housing and radiating bars fitted into the housing with their radiating surfaces expose outwardly. Hinged end caps close the end of the housing and have flanges which overlie the ends of the radiating bars to hold the bars in place. The radiating bars are further positioned by a plurality of cross struts which traverse the interior of the housing and have retaining ears thereon which engage the sides of the bars to laterally position the bars. The retaining ears on the center cross strut moreover interlock with adjacent tabs on the bars to further prevent the bars from bowing outwardly at the center of the housing. The tabs exist only at the retaining ears of the center cross strut so that the bars may be shifted longitudinally a short distance and then withdrawn from the housing when the end caps are open. Each bar includes a metal case having a center portion on which the radiating surface for the bar exists and edge portions which double back behind the center portion to form inwardly opening grooves. An electrical heating element extends along the back side of the concave portion and is captured in the grooves formed by the edge portions of the case. A strip of high temperature dielectric material is interposed between the heating element and the metal case. When the heating element is energized, it heats the metal case and causes the same to radiate heat from its center radiating surface.

3,763,350

SPLIT-ELECTRODE SERIES-LAMINATED HEATER

Nathaniel E. Hager, Jr., Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 861,694, Sept. 29, 1969, Pat. No. 3,598,961. This application Apr. 20, 1971, Ser. No. 135,804
Int. Cl. H05b *3/34*, *3/54*
U.S. Cl. 219—549 **2 Claims**



The electrical heater is provided for heating containers of food. The wall of the container may constitute a portion of the heater structure or the heater may be composed of three

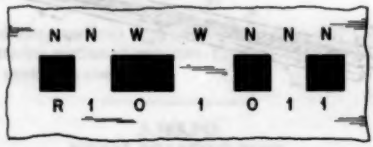
laminated structures fastened to a food container. The heater has a split electrode, both parts on the same side of an electrically conductive material. On the opposite side of the conductive material is the wall of the container or a conductive sheet. Principal current flow is from one of the split electrodes through the conductive layer to the large conductive sheet and then back through the conductive layer to the second split electrode.

3,763,351

BAR CODE SCANNER

William James Deerhake, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 14, 1972, Ser. No. 271,961
Int. Cl. G06k 7/10; G11b 27/10
U.S. Cl. 235—61.11 E **5 Claims**



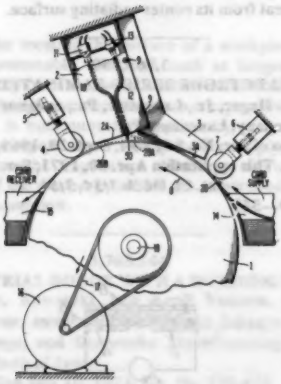
A self-clocking bar code is scanned by a multiple element scanner which provides a continuous output indicative of the reflectivity of the area scanned. At discrete points determined by the information content of the bar code the output of the scanner is sampled and decoded.

3,763,352

SELF-CLEANING READ HEAD

Eddy Humberto Del Rio, Palm Beach Gardens, and Donald Forman Pothier, North Palm Beach, both of Fla., assignors to RCA Corporation, New York, N.Y.

Filed June 21, 1971, Ser. No. 155,100
Int. Cl. G11b 5/48; G06k 7/14, 13/06
U.S. Cl. 235—61.11 E **6 Claims**



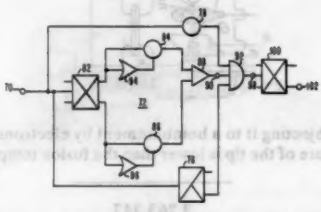
A read head and record card guiding assembly arranged so that the leading edge of a unit record card wipes the surface of the read head and is then spaced away from the surface of the read head when the card is passed beneath the read head.

3,763,353

RETROSPECTIVE PULSE MODULATION DECODING APPARATUS

Ernie George Nassimbene, 1375 Castlemont Dr., Apt. 11, San Jose, Calif.

Filed Sept. 27, 1971, Ser. No. 183,839
Int. Cl. G06k 7/15
U.S. Cl. 235—61.11 E **5 Claims**



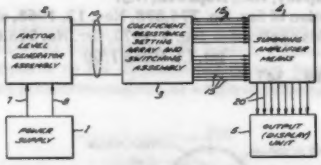
Digital data in self-timing reference is free from error due to irregular data spacing because of variations in speed and/or direction of scan in manual or machine applications with a pulse modulation of retrospective nature. Initially reference data manifestations are established and thereafter digital data are established partly on the basis of preceding manifestations of the data. In a binary data translating system, for example, a pair of reference pulses are spaced apart by a given interval. A binary unit is thereafter manifested by a pulse following at the same or similar interval and a binary zero is manifested by a pulse following at a differing interval. Each manifestation of a binary number thereafter depends on the interval between preceding pulses. A principle advantage of retrospective pulse modulation lies in demodulation. Large variations in spacing and relatively larger variations in the scanning speed are accommodated readily. Simple electric circuit demodulating means are used for measuring intervals between successive pulses and for comparing the measurements successively, indicating data of one nature or number by equal measurements and data of another by unequal measurements. Basic analog circuitry is described; digital circuitry is suggested.

3,763,354

RESISTANCE SETTING APPARATUS

William E. Claxton, Mogadore, and Harold C. Holden, Green Twp., Summit County, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed July 28, 1971, Ser. No. 166,793
Int. Cl. G06k 7/06, 19/06; G06g 7/58; G08c 9/08; H04q 3/58
U.S. Cl. 235—61.11 A **8 Claims**



A resistance setting apparatus is disclosed in the form of a card reader to read a standard Hollerith IBM card which has twelve rows of eighty columns. The desired variable resistance values are pre-established by being pre-punched on the card, which holes are then read simultaneously by the feeler contacts. The feeler contacts are connected to a resistor column to select from one to 10 resistors in three different decade groups and these are connected to the input of a feedback amplifier to establish the gain of the amplifier, and hence, the effective resistance thereof which is accurate to three decimal

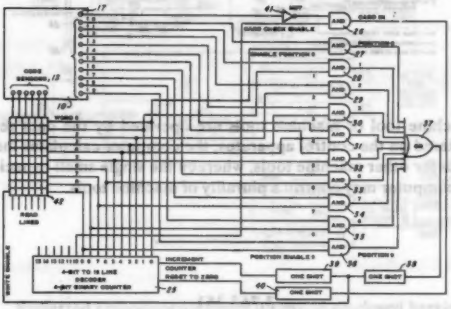
places. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,763,355

DYNAMIC POSITION-ACTUATED CARD READER

Jake L. Brand, Jr., Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 29, 1971, Ser. No. 213,600
Int. Cl. G06r *7/00*
U.S. Cl. 235—61.11 E **31 Claims**



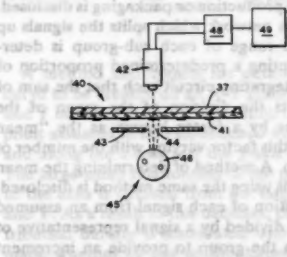
A card reader includes a first plurality of sensors positioned in a row for sensing the position of a card moved dynamically across such sensors and a second plurality of sensors positioned in a row substantially perpendicular to the row of position sensors for reading information from a card. In one embodiment, the card contains Hollerith information. The card reader reads all of the digits or characters contained on the card simultaneously one-code-line at a time as the card is dynamically moved across the second row of sensors. Additional sensors are provided to determine whether the card is upside down, whether the card is an invalid card and to indicate when the card is initially positioned so that the card reader can start reading. The dynamic position-activated card reader system can be used in reading punched cards, credit cards, security badges and the like.

3,763,356

UNIDIRECTIONAL FLUORESCENT INK IMPRINTED CODED DOCUMENT AND METHOD OF DECODING

Robert M. Berler, Westport, Conn., assignor to Pitney Bowes-Alpex, Inc., Commerce Park, Danbury, Conn.

Continuation of Ser. No. 822,162, May 6, 1969, abandoned. This application May 17, 1971, Ser. No. 144,237. The portion of the term of this patent subsequent to Oct. 19, 1988, has been disclaimed.
Int. Cl. G01n *21/38*; G06k *19/00*
U.S. Cl. 235—61.12 N **7 Claims**



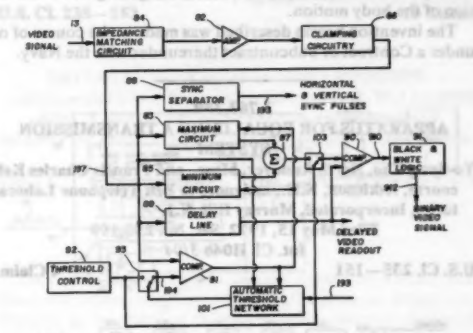
A photo optical document having a unidirection readout characteristic comprising a substantially ultraviolet light filtering translucent matrix or substrate upon which coded information is imprinted with fluorescent ink. This combination allows the coded document to be read only when the proper side of the document faces the reader light; if the wrong side faces the light, no readable glow will be emitted by the fluorescent ink. The document is read by placing a source of ultra violet light on one side of the document and the photo-electric sensor on the other side of the document.

3,763,357

THRESHOLD CIRCUIT FOR CONVERTING A VIDEO SIGNAL TO A BINARY VIDEO SIGNAL

Roger R. A. Morton, Penfield, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 78,769, Oct. 7, 1970, and a continuation-in-part of Ser. No. 835,673, June 23, 1969. This application Dec. 22, 1971, Ser. No. 201,219
Int. Cl. G06m *11/02*
U.S. Cl. 235—92 PC **14 Claims**



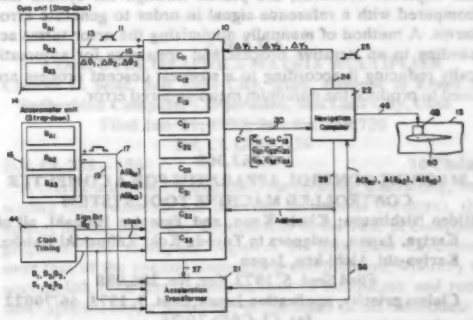
In a particle measuring system wherein a particulate sample is measured by operating on and with a video signal derived from a television camera which scans the sample, a trimodel threshold circuit for converting the sloping transitions of the video signal to a binary video signal having sharply defined transitions which occur substantially at and generally coincide with the particle boundaries of the sample being scanned.

3,763,358

INTERWEAVED MATRIX UPDATING COORDINATE CONVERTER

Donald R. Cargille, 2807 Ocean Front Walk, Venice, Calif.

Filed Oct. 21, 1971, Ser. No. 186,870
Int. Cl. G06f *15/50*, *7/48*
U.S. Cl. 235—150.25 **7 Claims**



A coordinate converter system for high speed and accurate updating of a direction cosine matrix which describes the rela-

tive orientation of one orthogonal coordinate frame such as a body frame to another frame such as a stable frame in response to rotations of both frames. The coordinate converter utilizes an interweaved series-parallel-reversal type algorithm that allows simultaneous cosine updating for both the body frame and the stable frame rotation without additional adders, while requiring only three word times for updating for body rotation. The system includes nine DDA dual adders operating in parallel in which the body update computations of the cosine matrix is maintained at full speed and the adders unused by the body frame computations are utilized during each word time to provide the stable frame computations. Because the algorithm updates the cosine matrix in response to both body frame and stable frame rotations with reversing computations when input incremental rotation pulses are received, a high degree of accuracy is provided without undesirable interactions due to the simultaneous processing of body frame and stable frame rotations. Thus the coordinate converter performs simultaneous calculations of the cosine matrix for both the body frame and the stable frame rotations and operates at a fast speed and with a high degree of resolution of the body motion.

The invention herein described was made in the course of or under a Contract or Subcontract thereunder with the Navy.

3,763,359

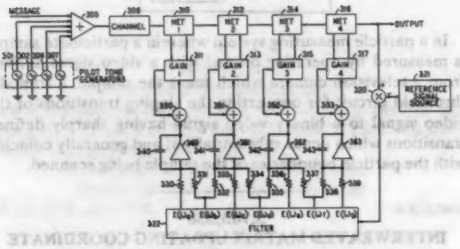
APPARATUS FOR EQUALIZING A TRANSMISSION SYSTEM

Yo-Sung Cho, North Andover, Mass., and Francis Charles Kelcourse, Atkinson, N.H., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 15, 1972, Ser. No. 253,199

Int. Cl. H04b *3/04*

U.S. Cl. 235—151 **4 Claims**



A method of adjusting Bode network equalizers utilizes three pilot signals for each network to achieve a minimum mean-squared error in a transmission system. These pilot signals, which are located at the center frequency of the network and half way between it and the center frequencies of the adjacent networks, are passed through the system and compared with a reference signal in order to generate error terms. A method of manually minimizing the error terms according to an iterative process and apparatus for automatically reducing it according to a steepest descent process are used to produce the minimum mean-squared error.

3,763,360

MACHINE CONTROL APPARATUS FOR A COMPUTER CONTROLLED MACHINE TOOL SYSTEM

Hideo Nishimura; Kimio Kano, and Tamotsu Ishigaki, all of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

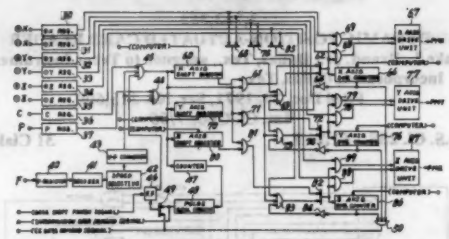
Filed Sept. 5, 1972, Ser. No. 286,088

Claims priority, application Japan, Sept. 9, 1971, 46/70022

Int. Cl. G05b *19/28*

U.S. Cl. 235—151.11 **12 Claims**

The control of a plurality of machine tools by a single small capacity computer is disclosed. The single computer is connected with a plurality of machine control apparatus which may register the computer calculated data for the use of the machine tools. While a machine tool or machine tools are operated by the data registered on the control apparatus, the computer calculates the data for other machine tools, whereby the single small capacity computer may control a plurality of machine tools.



3,763,361

COMPUTING CIRCUITS FOR THE CALCULATION OF THE STANDARD DEVIATION OF AN INPUT SIGNAL

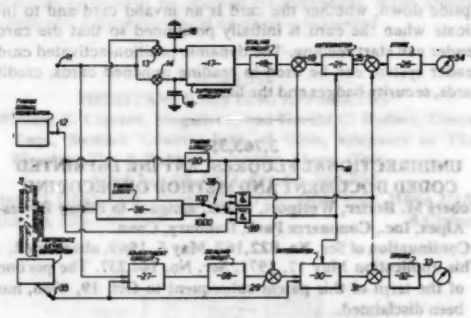
Edwin Robert Smart, Horsham, Sussex, England, assignor to Telomex Group Limited, Horsham, Sussex, England

Filed Mar. 8, 1971, Ser. No. 121,781

Claims priority, application Great Britain, Mar. 9, 1970, 11,143/70

Int. Cl. G06g *7/18*

U.S. Cl. 235—151.13 **5 Claims**



A computing circuit for computing the standard deviation of a group of signals such as signals representing the weights of a series of articles during production or packaging is disclosed. The signals are fed into a network which splits the signals up into sub-groups and the range of each sub-group is determined. A signal representing a predetermined proportion of the range is fed to an integrating circuit such that the sum of these portions represents the division of the mean of the ranges of the sub-groups by a factor known as the "mean range factor" the size of this factor varying with the number of signals in each sub-group. A method of determining the mean of the values of the signals using the same method is disclosed. In this method the deviation of each signal from an assumed mean is determined and divided by a signal representative of the number of signals in the group to provide an increment signal. The increment signals are then summed to provide a signal representing the true mean.

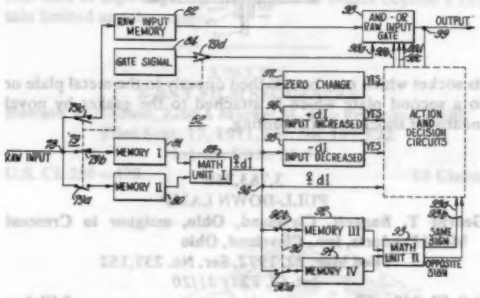
3,763,362
METHOD OF AND APPARATUS FOR CONDITIONING SIGNALS

Paul D. Griem, Jr., Medway, Mass., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 74,183, Sept. 21, 1970, which is a continuation of Ser. No. 844,688, April 14, 1969, which is a division of Ser. No. 563,112, July 6, 1966, Pat. No. 3,471,278. This application Mar. 7, 1972, Ser. No. 232,368

Int. Cl. G08c *13/00*

U.S. Cl. 235—151.31 **26 Claims**



Preferred embodiments of the invention disclosed herein include a method of operating an automatic computing system to condition signals, for example to reduce transients and other noise, and apparatus for carrying out the method. The method includes detecting successive changes in a signal in one direction, limiting the changes to small amounts initially, and increasing the change limit permitted in response to sustained successive changes in the same direction.

3,763,363
NUMERICAL CURVE GENERATOR IN A MACHINE TOOL SYSTEM

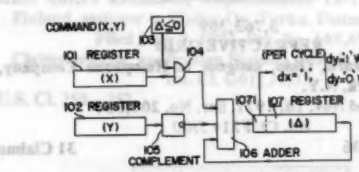
Nobuo Saita, and Yoichi Tanaka, both of Iruma, Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Kitayushu-shi, Japan

Filed Mar. 23, 1971, Ser. No. 127,289

Claims priority, application Japan, Mar. 24, 1970, 45/25093; Mar. 27, 1970, 45/26190; Apr. 9, 1970, 45/30967; Sept. 19, 1970, 45/82403

Int. Cl. G06f *15/46*

U.S. Cl. 235—152 **5 Claims**



A method and system for determining the advance of a curve to be created on an X-Y plane, wherein the distances X and Y between the current position of the curve and a specific point assumed in correspondence with the nature of the curve and along the *x*-axis and the *y*-axis of the plane are utilized. The large-small relationship of the pulse distribution densities to the axes is decided from the large-small relationship of X and Y. As a result of this decision, the axis of higher pulse distribution density is distributed with pulses and a decision is made whether or not to simultaneously apply pulses to the other axis according to the qualitative value (positive, negative, or zero) of the current operational result as determined by the relationships:

Δ' = (preceding operational result Δ') + (difference between X and Y)

or

Δ' = (preceding operational result Δ') − (the smaller of X and Y).

At the same time, by fixing the specific point or by moving it in correspondence to the advancing curve, functions corresponding to straight lines, arcs, parabolas, hyperbolics, ellipses, spirals, group circles, exponential curves, logarithmic curves, and other figures can be generated in a simple manner.

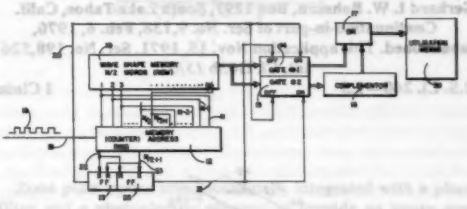
3,763,364
APPARATUS FOR STORING AND READING OUT PERIODIC WAVEFORMS

Ralph Deutsch, Sherman Oaks, and Robert M. Ashby, Pasadena, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Nov. 26, 1971, Ser. No. 202,448

Int. Cl. G01f *1/00*; **G06f** *15/34*

U.S. Cl. 235—152 **10 Claims**



The present invention is directed to a system for storing and reading out periodic waveshapes. The system utilizes the even and/or odd symmetry of a waveform in such a way that only sample points for one-half of the waveform need be stored in a memory device. When the waveform is read from the memory, the unstored sample points of the second half of the waveform are recreated, using the inherent symmetry of the stored samples of the waveform. The capacity of the memory storage device can then be cut in half, reducing substantially the cost of the system. If the desired periodic waveform is not symmetrical, it is converted into an equivalent waveform having an identical power spectrum but different phasing which created waveform is symmetrical. When such a created waveform is used to activate an audio device, the ear of the listener is unable to discern the difference between the desired waveform and the created one. This invention, therefore, has particular utility in electronic musical instruments.

3,763,365
COMPUTER GRAPHICS MATRIX MULTIPLIER

Charles L. Seitz, Salt Lake City, Utah, assignor to Evans & Sutherland Computer Corporation, Salt Lake City, Utah

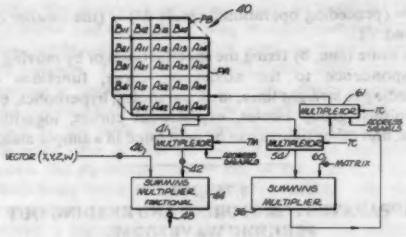
Filed Jan. 21, 1972, Ser. No. 219,720

Int. Cl. G06f *7/39*

U.S. Cl. 235—156 **10 Claims**

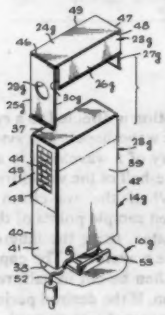
A matrix multiplier is disclosed for rotating, translating, and scaling multi-dimensional drawing definitions (vectors), the system having particular applicability to the field of computer graphics. The multiplier registers an additional dimension over that of the vectors undergoing computation, whereby to accomplish both the transformations of translation and rotation. Specifically, a multiplier is disclosed to accommodate a four-by-four matrix for use in three-dimensional transformations. Furthermore, the multiplier incorporates a cubic-array register for registering plural matrices as a push down stack,

along with structure for variously delivering elements therefrom. Individual matrices may be multiplied to provide



composite transformations. The system also incorporates structure for providing curve and surface information by iterating difference equations.

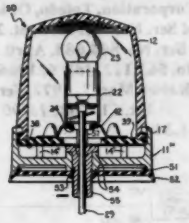
3,763,366
PHOTOGRAPHIC STROBE LIGHT ADAPTER
Gerhard I. W. Bahnsen, Box 1297, South Lake Tahoe, Calif.
Continuation-in-part of Ser. No. 9,138, Feb. 6, 1970, abandoned. This application Nov. 15, 1971, Ser. No. 198,526
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 **1 Claim**



An adapter which can be removably fitted over a photographic flash cube or strobe unit, and which has spaced portions engageable with opposite sides of the cube or strobe unit to locate the adapter relative thereto, with the adapter being constructed to block off a predetermined part but not all of the light emitted by the cube or strobe unit in a relation adapting the cube for proper illumination of a particular subject at a particular distance from the camera.

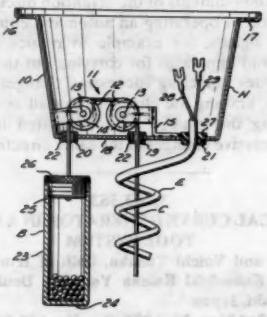
3,763,367
VEHICULAR LIGHT WITH FLANGE-FASTENED LENS
Edward J. Nitsch, Camillus, and Fred F. Stube, Syracuse, both of N.Y., assignors to R. E. Dietz Co., Syracuse, N.Y.
Filed Apr. 29, 1971, Ser. No. 138,465
Int. Cl. F21v *15/04*; B60q *9/00*
U.S. Cl. 240—7.1 R **1 Claim**

A vehicle light having a tubular base in any one of a variety of styles has a cup-shaped lens having angularly spaced, outwardly projecting flanges around its open end. The base has one open end to which is secured an annular metal plate having angularly spaced, inwardly projecting flanges spaced outwardly of the plate. A resilient annular gasket between lens and plate is compressable for inserting the lens flanges between the plate flanges and then turning the lens with its flanges under those of the plate. The lens encloses a lamp and



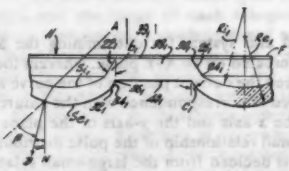
its socket which may be attached directly to the metal plate or to a second plate which is attached to the gasket by novel means for shock-proof mounting.

3,763,368
PULL-DOWN LAMP
George T. Baggott, Cleveland, Ohio, assignor to Crescent Metal Products, Inc., Cleveland, Ohio
Filed Mar. 22, 1972, Ser. No. 237,152
Int. Cl. F21v *21/20*
U.S. Cl. 240—69 **2 Claims**



An electrical fixture supported from the ceiling or other overhead structure having a fixed central hollow housing mounted on the overhead structure and a light unit vertically adjustable with respect thereto by means of a suspending cable passing through the housing and a counterweight attached to the cable.

3,763,369
REFRACTIVE GRID
Ian Lewin, Newark, Ohio, assignor to Holophane Company, Inc., New York, N.Y.
Filed Nov. 18, 1971, Ser. No. 200,084
Int. Cl. F21v *5/00*
U.S. Cl. 240—106 **31 Claims**



A refractive grid for use with a luminaire, to counteract glare. The refractive grid comprises a plurality of lenses and

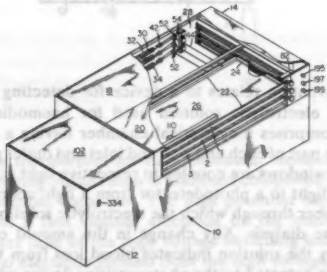
screening elements which, jointly, form a mosaic or a pattern covering substantially the entire surface of the refractive grid. Each lens has a concave light incident surface and a convex light emergent surface, the respective radii being constant over the entire refractive grid. Grids are disclosed having a concave incident surface having a radius of curvature generally greater than the convex emergent surface and vice versa. These radii may, however, be essentially indentical, or the convex emergent surface may have a radius of curvature greater than that of the concave incident surface. The screening elements are refractive elements disposed at uppermost extension of the lenses. The construction counteracts any distribution of high-angle light emergent at angles beyond a certain limited angular range.

3,763,370

X-RAY FILM SEQUENCES

Howard A. Hanson, 2268A Market St., San Francisco, Calif.

Filed Sept. 17, 1971, Ser. No. 181,522
Int. Cl. G01n *21/00*
U.S. Cl. 250—470 **18 Claims**



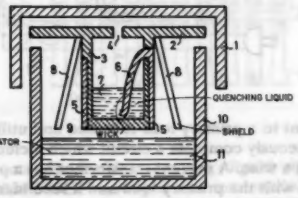
A changer for sequentially exposing a plurality of film cassettes during patient X-ray procedures. A sequencer permits either automatic or semiautomatic operation of the changer. Means are further provided for selective vertical positioning of the changer with respect to an X-ray machine. Radiation detection means are optionally provided for controlling the sequencer.

3,763,371

METHOD AND APPARATUS FOR OBTAINING THE RELATION BETWEEN THE CHANNELS RATIO AND THE EFFICIENCY IN A LIQUID SCINTILLATION STANDARD SAMPLE

Matti Antero Reunanen, Kupittaankatu 11-13 C38, Turku, Finland, assignor to Wallac Oy, Turku, Finland

Filed June 3, 1971, Ser. No. 149,692
Claims priority, application Finland, June 3, 1970, 1573/70
Int. Cl. G01j *39/18*
U.S. Cl. 250—252 **5 Claims**



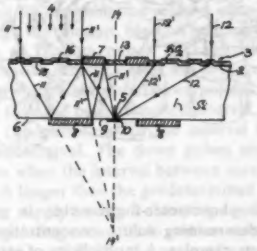
A method and apparatus for obtaining the relation between the channels ratio and the counting efficiency of a liquid scintillation standard sample includes the transfer of a gaseous quencher from one vessel by means of an absorbent transfer medium to another vessel containing the liquid scintillation standard sample and plotting the light pulses obtained during the transfer.

3,763,372

ZONE PLATE OPTICS MONOLITHICALLY INTEGRATED WITH PHOTOELECTRIC ELEMENTS

Andre Fedotowsky, Cap Rouge, Canada, and Kurt Lehovec, Williamstown, Mass., assignors to Inventors & Investors, Inc., Williamstown, Mass.

Continuation-in-part of Ser. No. 32,160, April 27, 1970, Pat. No. 3,649,837. This application Nov. 2, 1971, Ser. No. 194,999
Int. Cl. H01j *1/62, 3/14*; H01l *11/00*
U.S. Cl. 250—211 J **16 Claims**



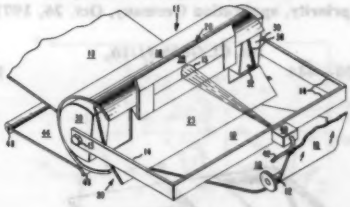
Zone plate optics is monolithically integrated with a phase filter and a photoelectric element to provide an image conforming to the shape of the photoelectric element. Saving of space at optimized light input is achieved by multiple reflections of light beam or by close packing of optical elements in a two dimensional matrix of hexagonal symmetry.

3,763,373

DEFECT DETECTOR FOR A MOVING WEB

Ernest Greenberry Baber, Waynesboro, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 15, 1972, Ser. No. 234,966
Int. Cl. G01n *21/30*
U.S. Cl. 250—572 **3 Claims**



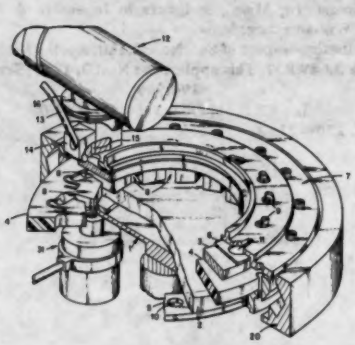
An apparatus for detecting irregularities, such as hard defects and varying tension, in a continuous web moving in a path includes a cylinder mounted for eccentric movement about an axis above and transverse to said web and a plate mounted for angular movement about the same axis. The lower edge of the plate is transverse to and engages the web and a guide positioned below the web and adjacent the cylinder directs the web into engagement with the outer surface of the cylinder. Means are provided to detect movement of the cylinder and the plate occasioned by irregularities in the web.

3,763,374

DYNAMIC MULTISTATION PHOTOMETER-FLUOROMETER

Thomas O. Tiffany; James C. Mailen, both of Oak Ridge, and Louis H. Thacker, Knoxville, all of Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 22, 1972, Ser. No. 282,814
Int. Cl. G01t 1/20
U.S. Cl. 250—363 3 Claims



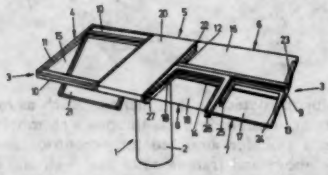
An analytical photometer-fluorometer is provided for simultaneously determining solute concentration in a multiplicity of discrete samples. A multiplicity of sample analysis chambers or cuvettes are arranged in a circular array within a centrifuge rotor to provide a rotary cuvette system. Each cuvette is provided with a shallow portion (0.1 – 0.2 cm depth) having a transparent window on one side only for making fluorometric measurements and a portion having greater depth (≈1 cm) and transparent windows on both sides for making photometric measurements. A photometer light source and a photodetector are disposed on opposite sides of the centrifuge rotor to make photometric measurements of the cuvette contents. A fluorescence excitation light source is disposed on the same side of the rotor as the photodetector and oriented to direct a light beam at an angle into the shallow portion of each cuvette.

3,763,375

SUPPORTING TABLE FOR PATIENTS

Ludwig Scheninger, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Mar. 3, 1972, Ser. No. 231,482
Claims priority, application Germany, Oct. 26, 1971, P 21 53 363.1
Int. Cl. G03b 41/16
U.S. Cl. 250—444 1 Claim



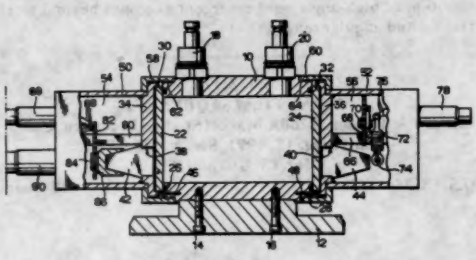
A supporting table for patients, preferably intended for the ray therapy, has plates for supporting the patient which are carried by a table frame. The invention is particularly characterized in that these plates are optically clear transparent.

3,763,376

DETECTOR DEVICE FOR HAEMODIALYSIS UNIT

Sergio Diamanti, Turin; Ennio Denti, Pino Torinese, and Antonio Vercellone, Turin, all of Italy, assignors to Sorin S.P.A., Sluggia, Italy

Filed June 22, 1972, Ser. No. 265,370
Claims priority, application Italy, June 30, 1971, 69222 A/71
Int. Cl. G01n 21/26
U.S. Cl. 250—565 3 Claims



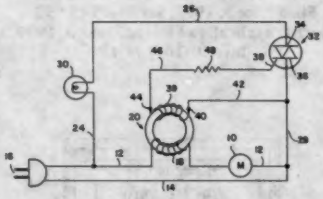
The invention relates to a device for detecting blood loss from an electrolytic solution used for haemodialysis. The device comprises a cylindrical chamber having a window in the lower part of each end wall and inlet and outlet ports at the top. The windows are coupled to respective light guides which transmit light to a photodetector from a light source through the chamber through which the electrolytic solution is passed during the dialysis. Any change in the amount of light absorbed by the solution indicates blood loss from the dialysis unit and is detected by the photosensitive device which is connected to a detection circuit which provides an alarm indication when the variation of the absorption exceeds a predetermined threshold value.

3,763,377

RANDOM CYCLE LOAD SWITCH

Allen H. Weston, 611 North St., Logansport, Ind.

Filed Apr. 10, 1972, Ser. No. 242,573
Int. Cl. H01h 33/59
U.S. Cl. 307—140 3 Claims



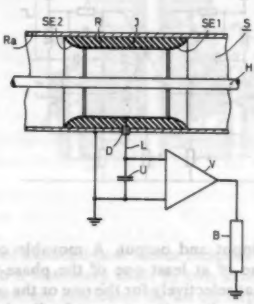
Current to a primary load is sensed and utilized in order to simultaneously complete a circuit which includes a secondary load and a triac. A current transformer has a primary winding in series with the primary load and a secondary winding coupled to the cathode and gate electrodes of the triac, so that a current to the primary load will cause a gate current sufficient to switch the triac from a non-conducting state to a conducting state.

3,763,378

VOLTAGE TRANSFORMER FOR FULLY INSULATED, METAL-CLAD HIGH VOLTAGE SWITCHING INSTALLATIONS

Willi Muller, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 16, 1972, Ser. No. 253,778
Claims priority, application Germany, May 17, 1971, P 21 25 297.1
Int. Cl. H02m 3/06
U.S. Cl. 307—149 6 Claims



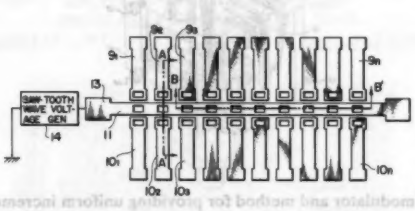
A voltage transformer for fully insulated, metal-clad high voltage switching installations is disclosed comprised of a high and low potential capacitor. The high potential capacitor is composed of a first laminar electrode on the inside of the metallic outer tube of the high voltage switching installation, and a second electrode formed from the high voltage conductor of the installation. A low potential capacitor is connected to the high potential capacitor and has an amplifier connected across the low potential capacitor and terminates in a load. The laminar electrode is preferably formed of a tube which, together with the high voltage conductor, forms a cylindrical capacitor.

3,763,379

SEMICONDUCTOR DEVICE FOR SCANNING DIGITAL SIGNALS

Mikio Ashikawa, Koganei, and Takamitsu Kamiyama, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 7, 1971, Ser. No. 205,630
Claims priority, application Japan, Dec. 7, 1970, 45/107566
Int. Cl. G11c 11/40
U.S. Cl. 307—221 C 16 Claims



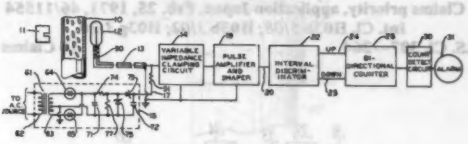
A semiconductor device for scanning digital signals includes: a row of MOSFETs arranged on a semiconductor substrate, the threshold voltages of individual MOSFETs being different from each other and a conductive layer connecting the gate electrodes of all the MOSFETs and a means for applying a saw-tooth wave voltage to said conductive layer.

3,763,380

METHOD AND APPARATUS FOR MEASURING RATES OF RANDOM PULSES

John C. Homer, III, Willoughby, and John R. Stock, Fairview Park, both of Ohio, assignors to Stock Equipment Company, Cleveland, Ohio

Filed May 5, 1971, Ser. No. 140,519
Int. Cl. H03k 5/20
U.S. Cl. 307—234 10 Claims



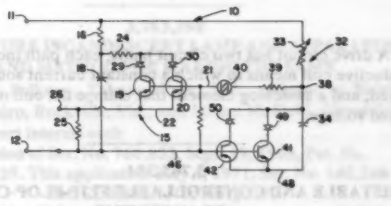
Method and apparatus for measuring the amount of material in a conduit by detecting the relative strength of radiation passing through the conduit. Method and apparatus for determining rates of random pulses by comparing the interval between successive random pulses to a predetermined interval and providing electrical pulses (down pulses) when the interval is greater than the predetermined interval, and other electrical pulses (up pulses) when the interval is less than the predetermined interval. The down pulses are provided at a minimum rate when the interval between successive radiation pulses is much longer than the predetermined interval. A high voltage power supply having a clamping zener diode in series between a regulating zener diode and an output filter capacitor to clamp the capacitor to the peak voltage across the regulating zener diode. A bleeder resistor across the regulating zener diode provides a discharge path for the output capacitor through the zener impedance of the clamping zener diode when the supply is turned off. A variable impedance clamping circuit including a zener diode and a conventional diode connected in series so that the zener diode is reverse biased and the conventional diode is forward biased. The series diodes clamp pulses of large amplitude to an acceptable level and provide increasing impedance to pulses of smaller amplitude.

3,763,381

THYRISTOR GATING AND PHASE SHIFT CIRCUIT

Gordon W. Cromwell, and Walter G. Borland, both of Waterford, Pa., assignors to Elgin Electronics, Inc., Waterford, Pa.

Filed Nov. 18, 1971, Ser. No. 199,915
Int. Cl. H03k 17/00
U.S. Cl. 307—255 12 Claims



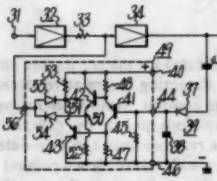
A circuit for developing a pulse output for phase control of thyristors and the like characterized in the utilization of a minimum number of components and a unique capacitor discharge circuit. Full wave control is achieved by the switching of a pair of complementary transistors in emitter coupled connection with a load impedance, receiving pulse forming power from the cyclical power source and a short time constant RC circuit, being switched by trigger signals developed from a silicon bilateral switch sensitive to the potential in an adjustable RC phase shift circuit. A further pair

of complementary transistors and associated diodes perform discharge of the capacitor upon reversal of the applied voltage, being sensitive to the direction of charging current and the polarity of potential at the capacitor.

3,763,382
AMPLITUDE CONTROL CIRCUIT

Tetsuya Horichi, and Yoshitaka Kanemoto, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 1, 1972, Ser. No. 230,765
Claims priority, application Japan, Feb. 25, 1971, 46/11554
Int. Cl. H03k *5/08*; H03b *3/02*; H03g *3/20*
U.S. Cl. 307—264 **10 Claims**

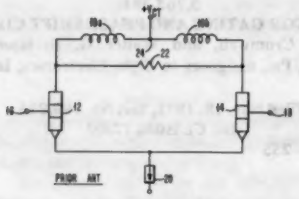


A signal amplitude control circuit having a main signal transmission path and a shunt path comprising a variable impedance circuit having a plurality of series connected semiconductor elements whose impedances are varied by changing their biasing conditions in response to a control signal.

3,763,383
DRIVE CIRCUIT FOR INDUCTIVE DEVICE

Harmon W. Johnson, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,526
Int. Cl. H03k *3/53*
U.S. Cl. 307—270 **9 Claims**



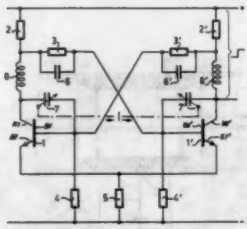
A drive circuit has two circuit paths, each path including an inductive coil means to which a constant current source is applied; and a switching element that clamps the coil means to a fixed voltage.

3,763,384
BISTABLE AND CONTROLLABLE FLIP-FLOP-CIRCUIT ARRANGEMENT

Theo Stutz, Basserdorf, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Continuation-in-part of Ser. No. 3,896, Jan. 19, 1970, abandoned. This application Nov. 17, 1971, Ser. No. 199,710
Claims priority, application Switzerland, Jan. 21, 1969, 819/69
Int. Cl. H03k *3/286*
U.S. Cl. 307—291 **22 Claims**

A bistable and stability controllable flip-flop circuit arrangement comprising two amplifiers each having an output and an input. Means define respective direct-current coupling paths for mutually coupling the respective output of each amplifier with the input of the other amplifier in such a manner that in each of both operating conditions one of both amplifiers assumes an active amplifying state and the other of both amplifiers is driven into an inactive non-amplifying state. There is also provided means defining a respective alternating current-feedback path incorporating phase-rotating impedances arranged between both amplifiers between their

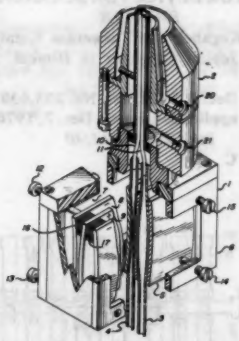


own respective input and output. A movable control body changes the value of at least one of the phase-rotating impedances such that selectively for the one or the other of both amplifiers a positive alternating current-feedback condition is fulfilled between its output and its input which renders unstable the amplifying state in which the relevant amplifier is functioning and via the direct current-coupling paths common to both amplifiers switches such amplifier into its other operating state.

3,763,385
MODULATOR APPARATUS UTILIZING PIEZOELECTRIC PLATES

Victor G. Mossotti, and Judith A. Eakin, both of Urbana, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Aug. 5, 1970, Ser. No. 61,148
Int. Cl. H04r *17/00*
U.S. Cl. 310—8.3 **6 Claims**



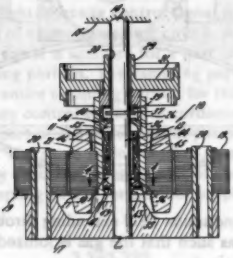
A modulator and method for providing uniform increments of fluid in a continuously pulsing manner, is disclosed. The modulator employs the piezoelectric effect to impart peristaltic-like action to a flexible, resilient channel causing fluid contained within that channel to be pulsed from the channel, in the form of substantially uniform increments or slugs. The modulator is employed, for example, in combination with, and to feed fluid sample to, an analytical instrument such as a flame spectrophotometer.

3,763,386

UNIT BEARING MOTOR

Gordon R. Anderson, Jr., Roscoe, Ill., assignor to Airtrol Corporation, Rockton, Ill.

Filed Apr. 6, 1972, Ser. No. 241,703
Int. Cl. H02k 5/16
U.S. Cl. 310—90 8 Claims



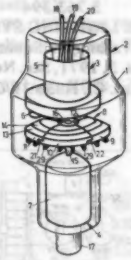
The rotor of a shaded-pole motor includes a central housing supported on a stationary shaft by two axially spaced sleeve bearings which are lubricated by an oil impregnated tubular liner telescoped into the housing and sandwiched between the inboard faces of the bearings. The bearings include a pair of slanted passageways extending through portions thereof from the inner walls of the bearings adjacent the shaft to the inboard faces so that the outer surface of the shaft is in communication with the liner. As the bearings rotate, oil bleeding along the shaft accumulates in the passageways and, by virtue of the centrifugal force generated by the rotating bearing, is slung through the passageways and back to the liner to prevent the oil from leaking out of the housing.

3,763,387

X-RAY TUBE WITH ROTARY ANODE

Karl Silbermann, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Dec. 9, 1970, Ser. No. 96,527
Claims priority, application Germany, Feb. 28, 1970, P 26 09 538.9
Int. Cl. H01j 35/04
U.S. Cl. 313—60 5 Claims



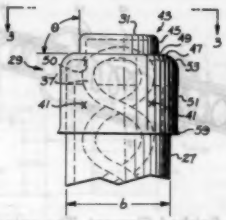
An X-ray tube with a rotary anode the path of the focal spot of which is subdivided by separating adjoining surfaces. The invention is particularly characterized in that the separating adjoining surfaces extend not only through the path of the focal spot but also through the anode body.

3,763,388

CATHODE RAY TUBE ELECTRON GUN

David Benda, Geneva, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Division of Ser. No. 190,599, Oct. 19, 1971, Pat. No. 3,728,574. This application Oct. 30, 1972, Ser. No. 302,358
Int. Cl. H01j 19/20, 1/26
U.S. Cl. 313—64 3 Claims



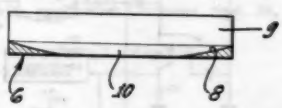
In a cathode ray tube electron gun, a dimensional stability, is provided for capping a terminal-emitting cathode sleeve. The cathode closure is diversely shaped to have a mesa-like terminal portion, with the planar end surface therof formed to provide a flat substrate area to accommodate the deposition of electron emissive material thereon. A strengthening transition portion extends from the periphery of the mesa-like portion to form an annular shoulder therearound. A peripheral skirt portion, extending downward from the shoulder, is of a length and internal diameter to facilitate encompassment and affixation to the terminal portion of the sleeve.

3,763,389

SHADOW MASK HAVING CONCAVE REFLECTING SURFACE SURROUNDING EACH APERTURE

Peter Schwarz, 1501 Rexford Dr., Los Angeles, Calif.

Filed May 11, 1970, Ser. No. 36,294
Int. Cl. H01j 29/06, 31/20
U.S. Cl. 313—92 B 1 Claim



In shadow-mask type color-television the differently colored dots of each group are superimposed upon each other by means of concave mirrors, each group having its individual mirror. These mirrors are located either on the shadow-mask or on the backside of the screen. The mirrors also add additional light to the screen.

3,763,390

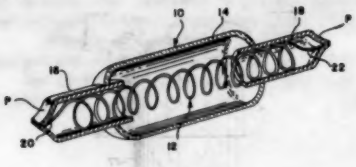
MINIATURE INCANDESCENT LAMP AND APPARATUS AND METHOD FOR MAKING THE SAME

Donald J. Belknap, Takoma Park, Md., assignor to Nelson H. Shapiro, Rockville, Md., and Milton M. Field, Alexandria, Va.; a part interest each

Division of Ser. No. 760,852, Sept. 19, 1968, Pat. No. 3,578,429. This application May 4, 1971, Ser. No. 140,260
Int. Cl. H01k 1/16; H01j 5/50
U.S. Cl. 313—315 3 Claims

Microminiature incandescent lamp having a tubular envelope with a glass central section and metal end sections heat-sealed to the central section. The envelope contains a filament coil secured to the end sections by mechanical cold-weld pinch-offs that seal the previously evacuated envelope. Envelopes are formed seriatim by feeding the components to an assembly station where the end sections are partially inserted into the central section. The resulting assemblies are conveyed to a sealing station where heat is directed only to the metal end regions of the envelope, so that only the end regions

of the glass section are deformed in sealing. Filaments are formed and inserted into the envelopes by pulling a length of filament wire through a tubular guide, inserting an envelope over the guide, winding a filament coil from the end of the filament wire projecting from the guide, and then pulling the envelope over the finished filament. The outer diameter of the filament coil is initially greater than the inner diameter of the end sections of the envelope, so that the coil is stretched in length and reduced in diameter when it is drawn into the envelope.



3,763,391

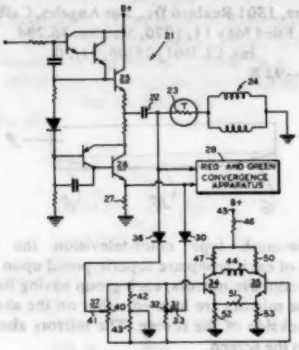
COLOR TELEVISION CONVERGENCE APPARATUS

George Ernest Rollins, Batavia, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,698

Int. Cl. H01j 29/50

U.S. Cl. 315—13 C 9 Claims



Convergence apparatus for converging one electron beam in a cathode ray tube in a color television receiver to the converged position of the other two beams is shown. The convergence apparatus includes transistors for differentially energizing the convergence winding and differential amplitude control of the convergence signals.

3,763,392

HIGH PRESSURE METHOD FOR PRODUCING AN ELECTRODELESS PLASMA ARC AS A LIGHT SOURCE

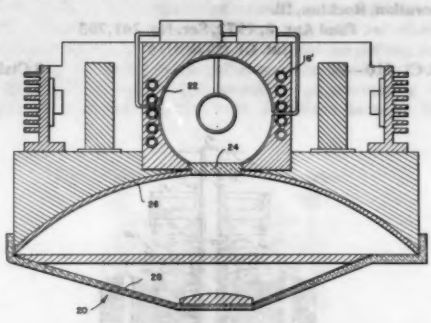
Donald D. Hollister, Placentia, Calif., assignor to Charybdis Inc., Irwine, Calif.

Continuation of Ser. No. 063,870, Aug. 14, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,496

Int. Cl. H01j 61/12; H05b 41/24

U.S. Cl. 315—248 5 Claims

Method of generating an electrodeless plasma arc as a light source including confining a plasma-forming gas such as xenon within a quartz sphere, pressurizing while confining the gas, and generating of power exteriorally of the container so as to develop an induction field extending through the container and into the gas such that the gas is ionized as a plasma arc within the container.



3,763,393

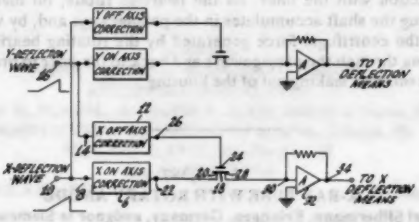
LINEARITY CORRECTION CIRCUIT FOR A CATHODE RAY TUBE

Hugh Edward White, Hopewell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 28, 1970, Ser. No. 41,251

Int. Cl. H01j 29/70

U.S. Cl. 315—27 GD 11 Claims



Deflection waves are applied via the conduction paths of two field-effect transistors, respectively, to the X and Y deflection means of a cathode ray tube. The impedance of each conduction path is controlled by applying to the gate electrode of each transistor a portion of the deflection wave applied to the other transistor.

3,763,394

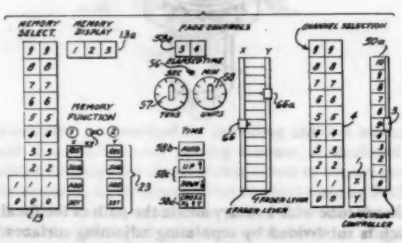
STAGE LIGHTING SYSTEMS

Stanley Blanchard, 4 Washington Square, New York, N.Y.

Filed Sept. 3, 1971, Ser. No. 177,701

Int. Cl. H05b 39/06

U.S. Cl. 315—294 23 Claims



A stage lighting system here utilizes circulating shift registers for containing many groups of bits for concurrent con-

trol of correspondingly many light-intensity control circuits. Control information can be entered into each circulating shift register in various ways, as by entering a group of bits at a time under manual control for establishing a desired level of control of a given light-intensity control unit, or as by entering sequences of groups of bits from a memory unit or from another circulating shift register, or in other ways; and the contents of each circulating shift register can be recorded in the memory unit.

Each supplied light-intensity control signal is subject to fading under control of a timed sampling circuit. A supplied light-intensity control signal is sampled for a part of each of a succession of sampling periods. The sampling part can be varied from zero to the entire sampling period, for reducing the supplied light-intensity control signal in accordance with the ratio of the sampling part of the fade-control period to the whole sampling period. The same fading control system is extended to cross-fading by utilizing the remainder of each fade-control period as the sampling period for another supplied light-intensity control signal.

3,763,395

INTERFERENCE SUPPRESSION CIRCUITS

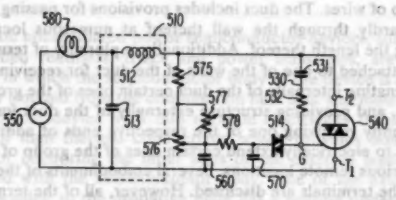
Michael John Shilling, Kingston, England, and Eric Peak, Glenrothes, Scotland, assignors to RCA Corporation, New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,119

Claims priority, application Great Britain, July 30, 1971, 3,057/71

Int. Cl. H05b *39/04*

U.S. Cl. 315—307 **10 Claims**



In a thyristor switching circuit which includes an LC filter, means responsive to the collapse of principal current through said thyristor are provided for preventing the thyristor from commutating into an off state during midcycle, said means including an inductance which is also included in the LC filter.

3,763,396

INTERFERENCE SUPPRESSION CIRCUITS

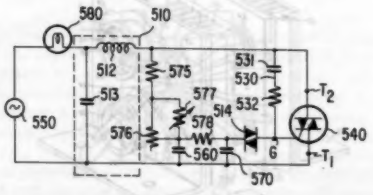
Michael John Shilling, Kingston, England, assignor to RCA Corporation, New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,120

Claims priority, application Great Britain, July 30, 1971, 36,058/71

Int. Cl. G05f *1/20*; H05b *37/02, 39/08*

U.S. Cl. 315—307 **10 Claims**



In a thyristor switching circuit including an LC filter, means responsive to the conduction state of the thyristor are provided for preventing the thyristor from commutating into an off state during midcycle.

3,763,397

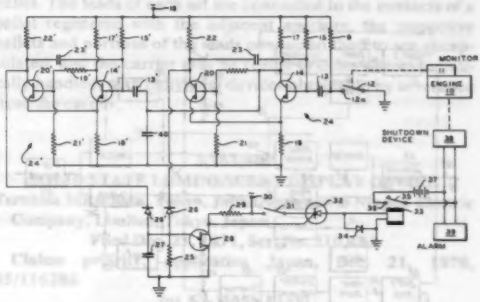
MONITORING AND SHUTDOWN APPARATUS

Lanny E. Yockers, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 15, 1972, Ser. No. 263,222

Int. Cl. H02h *3/00*

U.S. Cl. 317—9 R **5 Claims**



A shutdown and/or alarm system is actuated by a monitor. The system includes an AND circuit and two multivibrators. The multivibrators have different reset times. A signal from the monitor triggers the first multivibrator, which triggers the second multivibrator when it resets. The AND circuit is actuated to energize a shutdown device and/or an alarm when both multivibrators are triggered.

3,763,398

BATTERY CHARGING SYSTEM SUPPLIED FROM A POLYPHASE GENERATOR

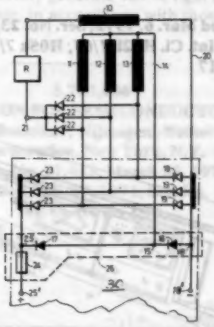
Istvan Ragaly, Stuttgart, Germany, assignor to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany

Filed Aug. 8, 1972, Ser. No. 278,808

Claims priority, application Germany, Sept. 30, 1971, P 21 48 810.8

Int. Cl. H02p *9/00*

U.S. Cl. 317—13 R **9 Claims**



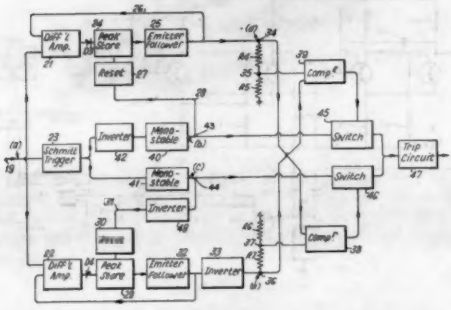
To provide for reverse polarity protection without substantial, additional components in star-connected polyphase generator battery charging systems, in which a pair of diodes are connected to the center, star point of the generator and direct current for battery charging is obtained from a polyphase bridge circuit, the protective fuse is interconnected in the additional diode circuit, preferably with the positive output terminal of the generator (in a negative-ground system) to simultaneously protect against over current and reverse polarity.

3,763,399

HIGH VOLTAGE SERIES RESONANT TESTING CIRCUIT ARRANGEMENTS

Raymond Vaughan Jenkins, Oldham, England, assignor to Ferranti Limited, Hollinwood, Lancashire, England

Filed Aug. 17, 1972, Ser. No. 281,480
Int. Cl. H02h 3/02, 3/22; G01r 19/04
U.S. Cl. 317—31 6 Claims



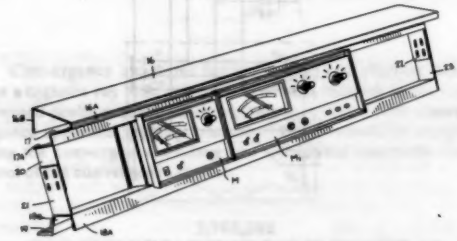
A testing circuit arrangement repetitively stores voltages representative of the peak values of adjacent half cycles of an alternating testing signal and compares each newly stored peak value with a predetermined fraction of the stored immediately preceding peak value (of the opposite polarity). The voltage associated with the longer stored peak value is cleared after each comparison has been made and before the next peak value of that polarity occurs; and if a fall in successive peak values, by the predetermined fraction, has occurred at the time when the stored voltage is cleared, the test is halted.

3,763,400

CONTROL MODULES FOR ELECTRONIC SYSTEMS AND CONSOLES FORMED THEREBY

Howard M. Layton, Pound Ridge, N.Y., and Kenneth T. Yocis, New Milford, Conn., assignors to Interlab, Inc., Danbury, Conn.

Filed Mar. 6, 1972, Ser. No. 231,940
Int. Cl. H02b 1/04; H05k 7/16
U.S. Cl. 317—117 5 Claims



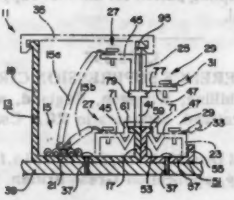
A control console formed by a family of modular sub-sections, each including a box-like housing formed by four pieces, one of which is a flat sheet bendable into a channel to define the rear and the top and bottom walls, the second and third of which are identical end pieces to define the end walls, and the fourth of which is the front panel of the housing. All of these pieces are of the same width and may therefore be stocked in strip form, but the channel and panel pieces may be cut to different lengths, whereby housings formed by fastening the pieces together may differ in length but are otherwise of the same dimensions. When such modules of different length are arrayed in side-by-side relation, they present a continuous integrated appearance. A console skeleton is provided which is adapted to clamp together an array of modules, the clamp being releasable whereby individual modules may readily be removed and replaced.

3,763,401

WIRING DUCT AND TERMINAL SYSTEM

David L. Ransom, 882 Hester Rd., Memphis, Tenn.

Filed Aug. 7, 1972, Ser. No. 278,379
Int. Cl. H02g 3/04
U.S. Cl. 317—122 11 Claims



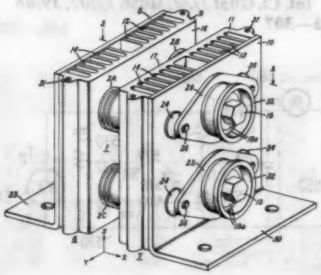
An electrical wiring system including a duct for carrying a group of wires. The duct includes provisions for passing wires outwardly through the wall thereof at numerous locations along the length thereof. Additionally, a plurality of terminals are attached to one of the walls of the duct for receiving and terminating internally of the duct certain ones of the group of wires, and providing structure externally of the duct for subsequently receiving one of the respective ends of additional wires to electrically extend certain ones of the group of wires to various remote locations. Several embodiments of the duct and the terminals are disclosed. However, all of the terminals pass through the wall of the duct and include particular structure for attachment thereof to the duct.

3,763,402

FLUID COOLED RECTIFIER HOLDING ASSEMBLY

Arnold I. Shore, Philadelphia, and John Talentinow, Thornton, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Nov. 9, 1970, Ser. No. 88,056
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 7 Claims



Disclosed is a cooled pressure assembly for applying clamping pressure to a plurality of semiconductor rectifiers and for electrically connecting them in parallel. The pressure is ap-

plied via a pair of heat dissipating electrodes disposed on opposite sides of the rectifiers. Each electrode contains a plurality of heat dissipating fins which make up a plurality of cooling fluid ducts immediately adjacent the rectifiers. Clamping force exciting means are provided to center the clamping forces axially on the rectifiers and to apply them through the electrodes and the fins therein contained to the rectifiers.

3,763,403

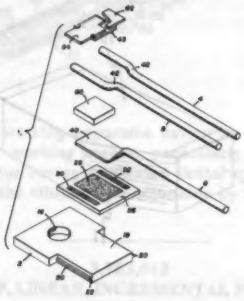
ISOLATED HEAT-SINK SEMICONDUCTOR DEVICE

William F. Lootens, Skaneateles, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Mar. 1, 1972, Ser. No. 230,760

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **3 Claims**



Plastic encapsulated power semiconductor devices, such as controlled rectifiers, triacs and power transistors, are disclosed in which the semiconductor body of the device is electrically isolated from the combination heat sink and mounting plate of the device by a thin ceramic electrically insulative plate of high thermal conductivity which provides bonding sites for anchoring the inner ends of the external leads associated with the semiconductor body. One of the external leads bonded to the insulative plate has a portion underlying the semiconductor body and providing an electrically conductive path of high thermal conductivity for heat extraction from the semiconductor body.

3,763,404

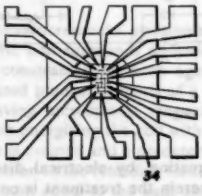
SEMICONDUCTOR DEVICES AND MANUFACTURE THEREOF

Alanson D. Aird, North Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 17,012, March 6, 1970, abandoned, which is a continuation of Ser. No. 709,561, March 1, 1968, abandoned. This application Apr. 12, 1972, Ser. No. 243,443

Int. Cl. H01l *5/00*

U.S. Cl. 317—234 R **4 Claims**



Semiconductor devices such as transistors are manufactured by use of a longitudinally extending tape-like carrier including a metallic layer secured to a flexible insulative layer, with the insulative layer having centrally located longitudinally spaced apertures. These apertures are covered by the metallic layer and are dimensioned to encompass contact regions of a semiconductor body such as a transistor or monolithic integrated circuit pellet. Longitudinally spaced sets of finger-like leads are formed from the metallic layer with the inner portions of the leads of each set extending cantilever-wise within the periphery of a respective adjacent aperture for registry with the contact portions of a semiconductor pellet. The leads of each set are connected to the contacts of a pellet registered with the adjacent aperture, the respective pellets and portions of the leads connected thereto are encapsulated, and the carrier may be reeled or otherwise automatically handled, with individual devices obtainable by severance from the carrier.

3,763,405

SOLID STATE LUMINESCENT DISPLAY DEVICE

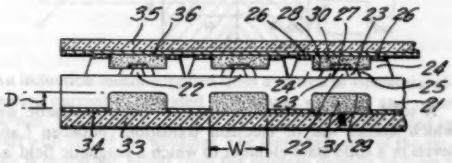
Teruhisa Mitsuhata, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Dec. 21, 1971, Ser. No. 210,433

Claims priority, application Japan, Dec. 21, 1970, 45/116286

Int. Cl. H05b *33/00*

U.S. Cl. 317—235 R **6 Claims**



A solid state luminescent display device comprising a GaAs substrate, a plurality of p-n junctions formed on one surface of the substrate in a predetermined pattern, an infrared-to-visible light converting fluorescent substance mounted on a luminescent region provided at each p-n junction, a plurality of recesses formed on the other surface of the substrate and arranged to correspondingly be aligned with respect to p-n junctions and infrared-to-visible light converting fluorescent substance provided in each recess to enable the device to simultaneously and selectively generate visible light at selective surfaces of the substrate, in accordance with those p-n junctions which are activated.

3,763,406

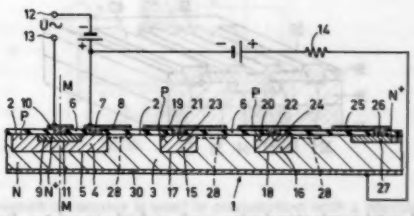
GUARD JUNCTION FOR SEMICONDUCTOR DEVICES

Cornelis Albertus Bosselaar, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 21,443, March 20, 1970, abandoned. This application Nov. 17, 1971, Ser. No. 199,600

Int. Cl. H01l *11/06*

U.S. Cl. 317—235 R **16 Claims**



A semiconductor device comprising semiconductor body containing a first zone of a first conductivity type surrounding

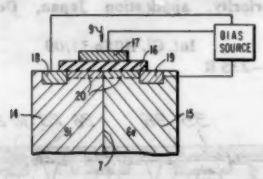
a second zone of a second conductivity type to form a first p-n junction; at least one further zone of the second conductivity type surrounded by the first zone to form a second p-n junction; an insulating layer on the surface of the semiconductor body; a contact layer extending through an opening in the insulating layer to the second zone and a conductive layer extending through another such opening to the further zone, the other opening being spaced from the outer periphery of the further zone.

3,763,407

SOLID STATE OSCILLATOR-DETECTOR DEVICE OF ELECTROMAGNETIC WAVES

Kazuhiko Yazawa, Chofu, Japan, assignor to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 688,544, Dec. 6, 1967, abandoned. This application Mar. 3, 1971, Ser. No. 120,510
Claims priority, application Japan, Dec. 14, 1966, 41/81497
Int. Cl. H05b *33/00*; H01l *15/00*
U.S. Cl. 317—235 **19 Claims**



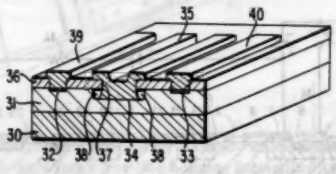
A solid state oscillator-detector of electromagnetic waves which makes use of electron transitions between Landau levels in a solid state element to which a magnetic field is applied. The element has two semiconductor regions which are in contact with each other and exhibit different Landau level systems in an applied magnetic field, and when an electric current is either passed through the element subjected to a magnetic field, electromagnetic waves are emitted or absorbed at the junction layer to perform either the generation or detection of electromagnetic waves respectively.

3,763,408

SCHOTTKY BARRIER SEMICONDUCTOR DEVICE HAVING A SUBSTANTIALLY NON-CONDUCTIVE BARRIER FOR PREVENTING UNDESIRABLE REVERSE-LEAKAGE CURRENTS AND METHOD FOR MAKING THE SAME

Gota Kano, Uguisudai; Mutsuo Iizuka, Oaza-Hoshida; Shohei Fujiwara; Hiromasa Hasegawa, both of Takatsuki City, and Tsukasa Sawaki, Toyonaka City, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma City, Japan

Filed Aug. 15, 1969, Ser. No. 850,535
Claims priority, application Japan, Aug. 19, 1968, 43/59371
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 317—235 R **17 Claims**



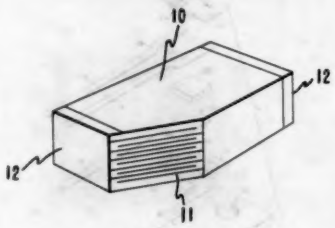
A semi-conductor device, such as diode transistor, field effect transistor with a Schottky barrier, has a separation space formed underneath the insulating film covering a major surface portion of the semiconductor substrate. This separation space is disposed adjacent to a metal layer accommodated in a recess in the substrate and extending through an opening in the insulating film, so as to eliminate unreasonable reverse leakage current, by effectively insulating the Schottky barrier from the electric charge accumulation layer beneath the insulating film.

3,763,409

CAPACITOR WITH COPPER CONTAINING ELECTRODE

John Leo Sheard, Williamsville, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 20, 1972, Ser. No. 245,903
Int. Cl. H01g *1/01*
U.S. Cl. 317—258 **9 Claims**



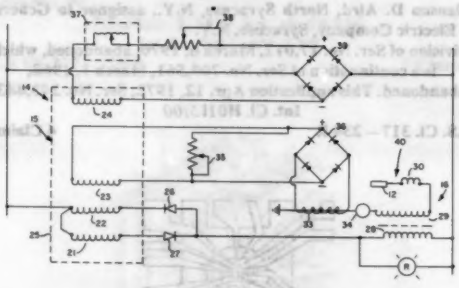
Improved metallizations for formation of conductors on substrates, comprising (1) copper, and (2) palladium or palladium oxide, wherein the ratio of Cu to Pd (as metal) is up to 2.5/1 (by weight). Also substrates having such metallizations fired thereon, and capacitors thereof.

3,763,410

METHOD OF TREATING MATERIAL BY ELECTRICAL DISCHARGE

Terrance D. Phillips, Richmond, Va., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 879,419, Nov. 24, 1969, abandoned. This application Sept. 17, 1971, Ser. No. 181,553
Int. Cl. B01k *1/00*; H01t *19/00*
U.S. Cl. 317—262 A **5 Claims**



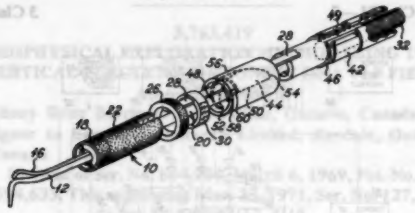
A method of treating, by electrical discharge, a web of polymeric film wherein the treatment is controlled by monitoring the output current at the electrical discharge treating means and by transmitting this monitored information to a current-controlling means to actuate it whereby to maintain the output current at the electrical discharge treating means within predetermined limits.

3,763,411

MATERIAL WORKING APPARATUS HAVING AN ELECTROMAGNETICALLY VIBRATED WORKING TOOL

Sven Karl Lennart Goof, Gammel Strandvj 236 A, Humlebaek, Denmark

Filed Mar. 27, 1972, Ser. No. 238,085
Claims priority, application Denmark, Mar. 31, 1971, 1527
Int. Cl. H01v 9/00
U.S. Cl. 318—118 21 Claims



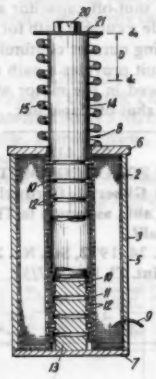
A material working apparatus having an electromagnetically vibrated working means, particularly an ultra sonic dental apparatus having a vibrated dental tool, wherein the magnitude of the vibrations is adjustable by hand on the apparatus itself.

3,763,412

OPEN LOOP, LINEAR, INCREMENTAL POSITIONING DEVICE

Dale W. Detrick, Danbury, Conn., and Angelo M. DiMonte, South Salem, N.Y., assignors to Thrust, Incorporated, New York, N.Y.

Continuation of Ser. No. 107,152, Jan. 18, 1971, abandoned. This application July 27, 1972, Ser. No. 275,456
Int. Cl. H02k 41/02
U.S. Cl. 318—135 16 Claims



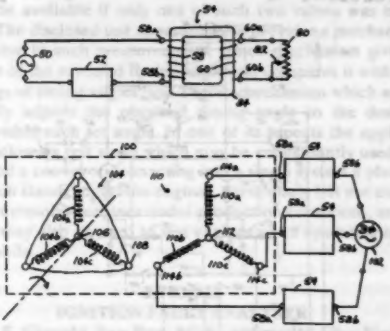
An open loop linear incremental positioning device wherein a cylindrical electric coil surrounds an articulated magnetic plunger which is constrained to work against an opposing force. The articulated plunger consists of a plurality of magnetic segments having incremental magnetic working gaps therebetween. Upon energizing the coil with a given potential a contracting force is created and a predetermined number of gaps close in opposition to the retarding force, thereby moving the plunger an amount equal to the gaps closed. The applied potential uniquely determines the position of the plunger since for a selected potential the contracting force balances the opposing force after the predetermined number of gaps have closed.

3,763,413

FLUX AMPLIFIER CIRCUITS FOR CONTROLLING INDUCTION MOTORS AND THE LIKE

Jacob Frazier Wattenbarger, 23751 Hazen Ave., Southfield, Mich.

Continuation-in-part of Ser. No. 106,415, Jan. 14, 1971, abandoned, and a continuation-in-part of Ser. No. 106,416, Jan. 14, 1971, abandoned, and a continuation-in-part of Ser. No. 131,959, April 7, 1971, abandoned. This application Feb. 11, 1972, Ser. No. 225,458
Int. Cl. H02p 7/14; G05f 3/04
U.S. Cl. 318—220 29 Claims



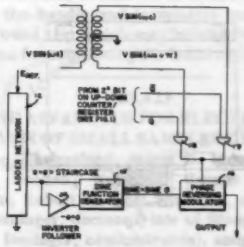
An induction motor supplied from a source of sinusoidal alternating current is provided with stator windings and rotor windings. The primary coil of a flux amplifier is connected in circuit with one of the windings. The secondary coil of the amplifier is energized, either from the primary directly or from a separate source, with sinusoidal current at the same fundamental frequency of the current in the primary coil. Means are provided to vary the amplitude and/or phase of the secondary current in the secondary coil to effect corresponding reactance changes at the primary which in turn vary the voltage and current supplied to the motor. The primary and secondary coils are coupled by a magnetic circuit having characteristics that cause fluxes from the primary and secondary coils to be linearly combined with each other so that voltage and current at the motor is controlled without developing harmonics of the fundamental frequency.

3,763,414

MULTI-SPEED DIGITAL TO SYNCHRO CONVERTERS

Arthur F. Clarke, Jr., Babylon, N.Y.

Filed Feb. 14, 1972, Ser. No. 225,721
Int. Cl. G05b 1/06
U.S. Cl. 318—605 8 Claims



A reversible counter is used in conjunction with a plurality of gates and an impedance network to develop a staircase output having a phase corresponding to the count initially registered. This output is then converted into an AC signal of

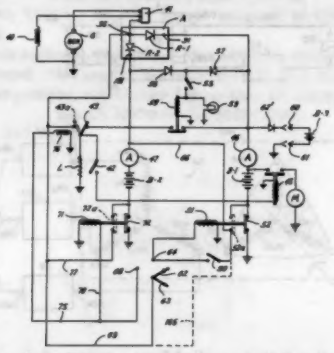
corresponding phase for use in controlling synchros and the like. By overlapping the output of these converters, one is able to achieve greatly increased resolution in the same manner that multi-speed synchro systems are employed.

3,763,415

AUTOMATIC BATTERY CHARGING CONTROL DEVICE AND APPARATUS

Clifford H. Ownby, P.O. Box 6811, Houston, Tex.

Continuation of Ser. No. 532,299, Mar. 7, 1966.
Filed Dec. 2, 1968, Ser. No. 784,530
Int. Cl. H02J 7/14
U.S. Cl. 320—6 2 Claims



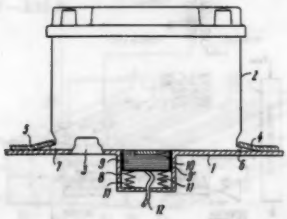
An automatic battery control system for vehicles and the like, having a main battery used for motor starting and one or more auxiliary batteries, and wherein each of such batteries is connected to a diode or rectifier, and wherein the two or more diodes or rectifiers are connected to a common terminal which is connected to a generator, whereby the main and auxiliary batteries may be discharged independently of each other at their respective loads, and may be charged automatically from the common generator source, with the diodes or rectifiers preventing the batteries from discharging back through the common terminal.

3,763,416

VOLTAGE REGULATOR SYSTEM FOR SECONDARY BATTERIES

Otto Jache, Budingen, Germany, assignor to Accumulatorenfabrik Sonnenschein G.m.b.H., Budingen, Germany

Filed May 24, 1972, Ser. No. 256,521
Claims priority, application Germany, June 8, 1971, P 21 28 510.9
Int. Cl. H01m 4/504
U.S. Cl. 320—35 8 Claims



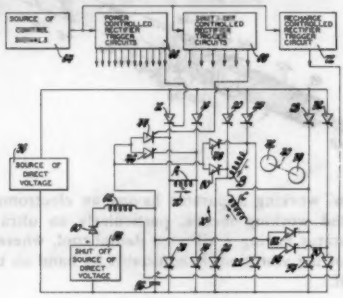
To permit charging of secondary batteries by electrical power at a voltage which is just below the gassing voltage of the battery, a temperature sensing device is placed on the holder for the battery, spring-pressed against the battery so that the actual battery temperature will be sensed. The sensed temperature then is utilized to control the voltage regulator to vary the charge voltage in accordance with actual battery temperature to provide for most rapid and safe charging under all battery operating conditions.

3,763,417

SHUT-OFF ARRANGEMENT FOR POWER CONTROLLED RECTIFIERS IN A DC TO AC INVERTER

Richard W. Johnston, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 26, 1971, Ser. No. 175,134
Int. Cl. H02m 7/52
U.S. Cl. 321—5 3 Claims



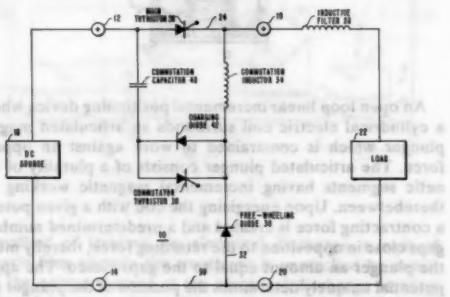
An AC induction motor is supplied excitation current from a source of direct voltage through a three-phase inverter. Each of the power controlled rectifiers of the inverter is shut off by applying the voltage of a shut-off capacitor through a respective shut-off controlled rectifier to the series combination of the source of direct voltage and the power controlled rectifier selected to be shut off. Accordingly, at the time of commutation, the voltage of the shut-off capacitor opposes the source voltage and provides reverse bias for the selected power controlled rectifier terminating conduction therethrough. Current continuity is maintained for the induction motor during shut-off intervals since the shut-off capacitor and the shut-off controlled rectifier provide a current path for the motor windings. In addition to providing current continuity during commutation, the shut-off circuit provides a path through which magnetic field energy stored in the motor windings is extracted and transferred to the shut-off capacitor.

3,763,418

SINGLE REACTOR FORCE COMMUTATED CHOPPER

William H. Beck, and Gilbert I. Cardwell, Jr., both of Palos Verdes Peninsula, Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 24, 1972, Ser. No. 246,846
Int. Cl. H02m 7/52
U.S. Cl. 321—45 C 10 Claims



A force commutated thyristor chopper is disclosed in which a single commutation inductor is coupled in the free-wheeling

path of the chopper together with a free-wheeling diode. The single inductor provides a chopper of relatively simple configuration in which main and commutator thyristors couple a commutation capacitor to opposite ends of the commutation inductor, and a charging diode is coupled in parallel with the commutator thyristor to facilitate charging of the commutation capacitor in opposite senses. The resulting circuit arrangement operates in a highly effective and efficient manner, minimizes trapped energy and protects the various component parts thereof by preventing dangerously high current and voltage transients.

3,763,419

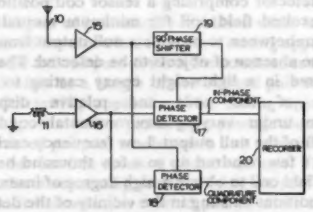
GEOPHYSICAL EXPLORATION METHOD USING THE VERTICAL ELECTRIC COMPONENT OF A VLF FIELD AS A REFERENCE

Anthony Rene Barringer, Willowdale, Ontario, Canada, assignor to Barringer Research Limited, Rexdale, Ontario, Canada

Division of Ser. No. 804,780, March 6, 1969, Pat. No. 3,594,633. This application Mar. 23, 1971, Ser. No. 127,225

Int. Cl. G01v 3/12, 3/16

U.S. Cl. 324—6 **7 Claims**



A geophysical exploration method and apparatus utilizing VLF fields produced by distant transmitters as a source of primary filed. The vertical electric alternating field component of the primary field is used as a stabel reference against which variations in magnetic alternating field components caused by inhomogeneities in earth conductivity can be measured.

3,763,420

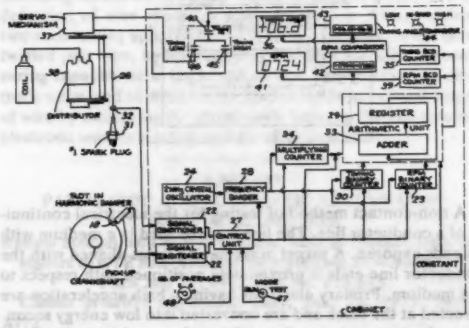
METHOD AND APPARATUS FOR TESTING INTERNAL COMBUSTION ENGINES

Richard C. Maisonville, Detroit, Mich., assignor to Scans Associates, Inc., Livonia, Mich.

Filed Nov. 22, 1971, Ser. No. 200,974

Int. Cl. F02p 17/00

U.S. Cl. 324—16 R **32 Claims**



This application discloses a method and apparatus for measuring and/or adjusting the timing angle of internal combustion engines. The method of measuring the timing angle comprises the steps of running the engine and producing voltage pulsations of uniform time frequency against which are simultaneously taken measurements of two values: first, the measurements of engine speed by counting the number of pulsations for one full and precise revolution of the engine from top dead center to top dead center of one selected cylinder, and simultaneously counting the number of pulsations from the moment the spark plug of the selected cylinder fires to the top dead center (for the advance firing) or from the top dead center to the moment of firing of the spark plug (for retarded firing). Counting two of such values enables the testing personnel to express the timing angle in degrees and to have the RPM of the engine at the time of testing, neither of which would be available if only one of such two values was measured. The disclosed test apparatus also provides a mechanism responsive to such measurements, which mechanism gives a readout of the revealed timing angle and compares it with the set range of timing angles, and a servo-mechanism which automatically adjusts the obtained timing angle to the desired value within such set angle. In one of its aspects the application discloses a test stand which may be conveniently used for tests, and a conveyor connecting into a single system a plurality of such stands to test the engines, particularly but not exclusively automobile engines under production conditions, as the system may also be used to test engines when operating in an automobile.

3,763,421

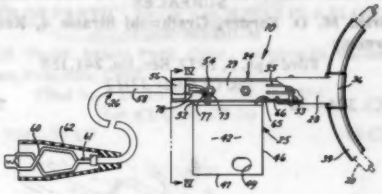
IGNITION FAULT ANALYSER

Arthur F. Glomski, Paw Paw, Mich., assignor to Allen Electric and Equipment Company, Kalamazoo, Mich.

Filed Sept. 9, 1971, Ser. No. 178,891

Int. Cl. G01r 13/42

U.S. Cl. 324—17 **11 Claims**



A dynamic spark plug tester adapted for use in testing spark plugs installed on an operating engine. The tester includes a hand actuable clamp alternatively engageable with the high voltage input cable to the distributor associated with such engine or with individual high voltage cables connecting the distributor to respective spark plugs. The clamp incorporates a capacitive coupling element engageable with such cables and has a hand engageable handle portion which carries a compact housing in which test circuitry and an indicating lamp are contained. A ground cable connected to such circuitry is fixedly supported by the handle and terminates remotely from the handle in a ground clip which may be attached to the engine or vehicle frame for completing the tester circuit.

3,763,422

METHOD AND APPARATUS FOR ELECTROCHEMICAL ANALYSIS OF SMALL SAMPLES OF BLOOD

John MacPhee, Chelmsford; James H. Mowbray, Holliston; Daniel C. Noonan, Norwood; Joseph A. Remillard, Framingham; Robert L. Scott, Medfield, all of Mass., and Henri M. Deninger, deceased, late of Stoughton, Mass. (by Barbara N. Deninger, administratrix), assignors to Corning Glass Works, Corning, N.Y.

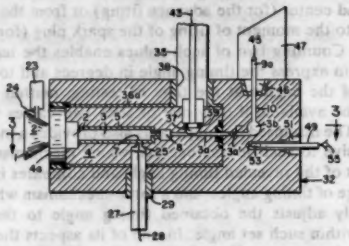
Filed Oct. 21, 1971, Ser. No. 191,211

Int. Cl. G01n 27/42

U.S. Cl. 324—30 R **10 Claims**

A system for determining values of pH, PCO_2, PO_2, HCO_3, total CO_2 and base excess in a small sample of blood. The

system comprises a measuring chamber common to the sensing portions of a flow-through pH electrode, a pH reference electrode, a carbon dioxide (PCO_2) electrode, and an oxygen (PO_2) electrode. In line and communicating with the chamber exit is a peristaltically activated pump which can draw small samples of blood into the chamber followed by a vacuum system for drawing the sample out of the chamber.



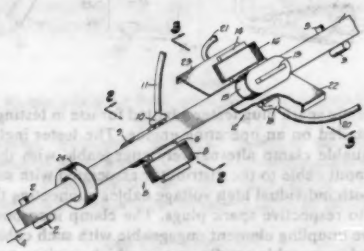
Communicating with the chamber entrance is a flush system for cleansing the chamber after the blood has been analyzed. The system also includes circuitry associated with the output of the electrodes for quickly determining and digitally displaying values for pH, PCO_2, and PO_2, and analogue calculators adapted to receive and apply values from the pH and PCO_2 electrodes to determine and digitally display values for HCO_3^-, total CO_2, and base excess.

3,763,423

MAGNETIC PARTICLE FLAW DETECTOR INCLUDING SHIELD MEANS TO PROTECT PREVIOUSLY TESTED SURFACES

Friedrich M. O. Forster, Grathwohl Strasse 4, Reutlingen, Germany

Filed Apr. 5, 1972, Ser. No. 241,159
Int. Cl. G01r *33/12*
U.S. Cl. 324—38 **7 Claims**



A pair of magnetizing plates are located so that a conveyed workpiece will move past the plate cores and flux applied to two lower side surfaces of the workpiece. A magnetic powder material is applied downwardly onto the workpiece upper parts and collects at stray field sites identifying defects. A second set of magnetizing plates are located farther along the path of movement to direct flux onto upper parts of the workpiece while sprayed magnetic powder is directed onto the lower parts for marking any defects that may occur on those surfaces. Shields restrict the deposition of powder to appropriate regions. The magnetic powder may be admixed with an adhesive in order to increase adhesion of the powder particles to the workpiece surface.

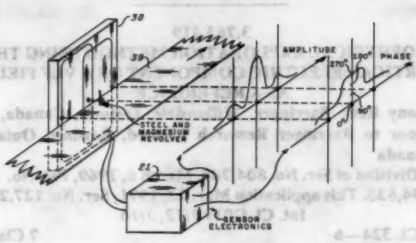
In still another form, the workpiece is heated as the workpiece moves along its path before testing in order to speed up drying of the surface and thus adhesion of the particles to defect. The magnetic powder may be heated also to accelerate action.

3,763,424

METAL DETECTOR FOR IDENTIFYING AND DISCRIMINATING BETWEEN OBJECTS OF DIFFERENT SIZE, SHAPE, ORIENTATION AND FERROUS CONTENT AND INCLUDING AN AUTO NULLING CIRCUIT

Clarence L. Bennett, Jr., Groton; Joseph D. DeLorenzo, Sudbury, and Harald Wilhelmsen, Carlisle, all of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed July 15, 1971, Ser. No. 162,884
Int. Cl. G01r *33/00*
U.S. Cl. 324—41 **2 Claims**



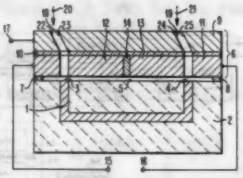
A metal detector comprising a sensor coil positioned relative to an excited field coil for minimum mutual indjctive coupling therebetween to provide a null output from the sensor coil in the absence of objects to be detected. The coils are rigidly secured in a lightweight epoxy casting to preclude deformation of the coils and relative displacement therebetween under varying environmental conditions to preclude drift of the null output. Low frequency excitation on the order of a few hundred up to a few thousand hertz is applied to the field coil to obtain a high degree of insensitivity to moisture conditions existing in the vicinity of the detector for further maintaining constancy of the null output. An autonulling circuit for automatically compensating for any long term drift of the detector output is also optionally included.

3,763,425

METHOD OF TESTING THE CONTINUITY OF AN ELECTRICAL CONDUCTOR BY USE OF AN ELECTRON BEAM CONVERTED FROM HIGH TO LOW ENERGY

Helmut Engelke, Wengertsteige, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 27, 1972, Ser. No. 275,608
Claims priority, application Germany, Feb. 18, 1972, P 22 07 546.3
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **7 Claims**



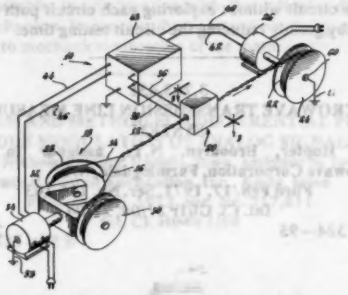
A non-contact method of testing for the electrical continuity of a conductor line. The line is embedded in a medium with its ends exposed. A target mask having holes aligned with the conductor line ends is proximately positioned with respect to the medium. Primary electrons having a high acceleration are directed at the mask and are converted into low energy secondary electron emission for striking the conductor line ends emitting additional secondary electrons which are monitored at collectors forming a part of the mask to obtain an indication of the continuity state of the conductor line.

3,763,426

METHOD AND APPARATUS FOR TESTING TWISTED PAIR WIRE TO LOCATE ELECTRICAL INSULATION FAULTS OR MEASURE TWIST OR WIRE RUNOUT OR SENSE BREAKS IN THE CONDUCTORS

Richard B. Wilkes, Danbury, Conn., assignor to Hipotronics, Inc., Brewster, N.Y.

Filed Mar. 7, 1972, Ser. No. 232,564
Int. Cl. G01r 31/08, 31/12
U.S. Cl. 324—54 36 Claims



A twisted pair of individually insulated wires is rapidly and reliably tested for electrical faults in a testing apparatus which separates the twisted pair of wires for continuous testing of the individual wires as a length of the twisted pair wire is drawn through the testing apparatus. The testing apparatus comprises a support member providing a passage along a feed axis for said twisted pair and an electrode unit mounted in the support member for free rotation about said axis. The electrode unit includes a separating member lying on said axis and arranged to fit between the twisted pair of wires to follow the twist of said twisted pair as it is fed along said axis so as to continuously remain between the twisted pair of wires and permit continuous separate testing of the individual wires. Electrode units of several different configurations are usable: In one electrode unit, the separating member fitting between the twisted pair of wires comprises an insulating sheet and conductive members on each side of the sheet for contacting the individual wires of the twisted pair. In other electrode units, the separating member fitting between the twisted pair of wires is designed to release when a kink or knot occurs in the wire, and in still other electrode units, the separating member fitting between the wires may be a solid conductor or a solid insulator with other electrode portions lying adjacent the individual wires. In each such testing apparatus, means are provided for making electrical contact with the electrode unit as it rotates, to enable connection to an indicating or control circuit. By means of such testing apparatus, twisted pair wire may be tested for pinholes, bare wire, and coincidence faults. By including means sensitive to rotation of the electrode unit, the detection of wire runout is achieved. In one testing system, two such testing apparatuses are axially separated on the same twisted pair wire, to detect open circuits in the wires by measuring capacitance in the length of wire between the two electrode units, and to measure the amount of twist per unit length of wire by measuring the phase angle between the two rotating electrode units in relation to their axial separation.

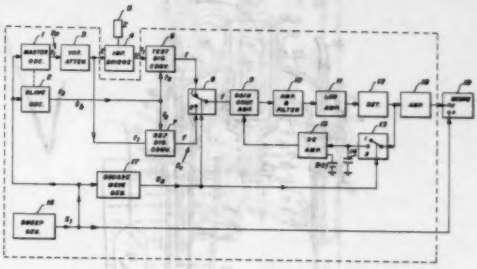
3,763,427

PANORAMIC AND AUTOMATIC RETURN LOSS MEASURING SYSTEM

Renato Stengel, and Basilio Catania, both of Milano, Italy, assignors to GTE International Incorporated, New York, N.Y.

Filed July 11, 1972, Ser. No. 270,613
Claims priority, application Italy, Jan. 22, 1972, 19704 A/72
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R 5 Claims

A system for determining the return loss of an impedance device employs a bridge network coupled to the impedance. The frequency of an input signal to the bridge network is swept continually from a first frequency to a second frequency and then back to the first frequency. A conversion circuit converts the varying frequency input and output signals of the bridge network to a pair of fixed frequency signals which are alternately coupled via a switch to the input connection of a logarithmic channel the output of which is connected to the vertical deflection terminal of an oscilloscope. A signal proportional to the logarithm of the bridge network input signal is displayed in the oscilloscope when the frequency is being swept in a first direction and a signal proportional to the logarithm of the bridge network output signal is displayed when the frequency of the input signal is being swept in the second direction, thus enabling the return loss to be read directly from the oscilloscope.

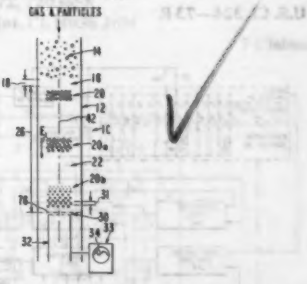


3,763,428

SIMULTANEOUS MEASUREMENT OF THE SIZE DISTRIBUTION OF AEROSOL PARTICLES AND THE NUMBER OF PARTICLES OF EACH SIZE IN A FLOWING GASEOUS MEDIUM

Donald H. Preist, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Nov. 26, 1971, Ser. No. 202,374
Int. Cl. G01n 27/00
U.S. Cl. 324—71 CP 15 Claims



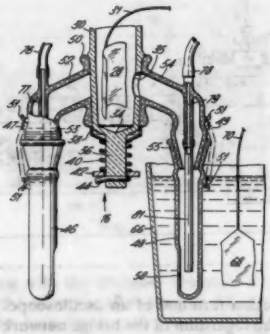
A method and apparatus are described for measuring the size distribution of aerosol particles in a gas stream and the number of particles of each size. Particle-laden gas flows through the apparatus at a controlled velocity. A group of particles located in a first region are rapidly charged by a pulsed corona discharge. The group of charged particles flows downstream into a second region in which an axial electric field is applied. The mobility of the charged particles through the field is a function of their charge, which in turn is a function of their size, so that the larger particles move through the second region faster and thus in less time than slow particles. In this manner, particles having a common size are concentrated in an axial direction as they move downstream. The magnitude of the charge on particles arriving at the downstream end of the second region is related to the elapsed time between the time of the charging pulse and the moment at which the charge is measured to indicate the particle size distribution and number of particles of each size.

3,763,429

APERTURE TUBE ASSEMBLY

Douglas H. Hoskins, St. Albans, Hertfordshire, England, assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Apr. 12, 1972, Ser. No. 243,269
Int. Cl. G01n 27/00, 21/00
U.S. Cl. 324—71 CP 4 Claims



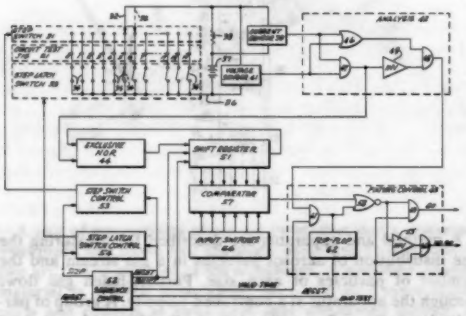
An assembly which includes a plurality of particle counting and sizing aperture tubes for use with a particle analyzer of the Coulter Type, the tubes being mounted on a turret structure to enable any chosen one to be used in the system to the exclusion of the others, the tubes being readily removed or replaced without affecting or requiring disassembly of the remainder of the apparatus.

3,763,430

CIRCUIT TESTING METHOD AND APPARATUS

Charles H. Terrey, Covina, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 17,413, March 9, 1970, abandoned.
This application Jan. 14, 1972, Ser. No. 217,859
Int. Cl. G01r 15/12
U.S. Cl. 324—73 R 24 Claims



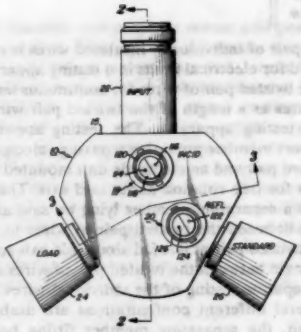
Method and apparatus for testing complexes of circuits, such as printed circuit boards and the like, for continuity of desired circuits and absence of short circuiting are provided. A circuit board having a plurality of possible circuit nodes has each node scanned sequentially by a step switch or the like. As each node is scanned in one embodiment, all lower order nodes are electrically interconnected, and means are provided for sensing closed circuit and open circuit signals between the scanned node and interconnected nodes. Logic is provided for "rejecting" a board if both the closed circuit sensing and open circuit sensing are either within or without acceptable limits and for "accepting" a board if either is within the limits when the other is without. Signals representative of the presence or absence of a circuit for each node as scanned is applied to a cyclic shift register having fewer bits than the number of circuit nodes. After all the nodes have been scanned, the final word in the cyclic shift register is compared with an input word for providing an output signal indicative of identity or lack of identity of the measured word and the comparison word. By sensing continuity between each circuit node sequentially while all lower order nodes are interconnected the lowest order node in each continuous circuit is identified, and an acceptable circuit can be distinguished from an unacceptable circuit without exploring each circuit path separately, thereby greatly reducing the circuit testing time.

3,763,431

MICROWAVE TRANSMISSION LINE MEASURING SYSTEM

Samuel Hopfer, Brooklyn, N.Y., assignor to General Microwave Corporation, Farmingdale, N.Y.

Filed Feb. 17, 1971, Ser. No. 116,143
Int. Cl. G01r 21/04, 27/04
U.S. Cl. 324—95 20 Claims



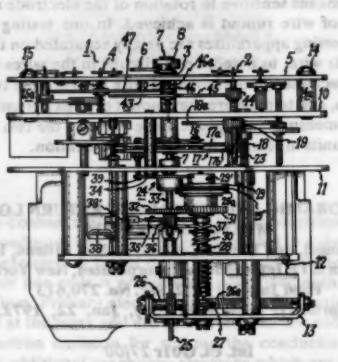
A reflectometer is constructed with a thin-film resistive network in a planar Y-junction configuration.

3,763,432

INDICATOR DRIVE AND POSITIVE-ZERO RESET MECHANISM FOR A DEMAND METER

Donald M. Ham, Rochester, N.H., assignor to General Electric Co., Pittsfield, Mass.

Filed Apr. 6, 1972, Ser. No. 241,709
Int. Cl. G01r 19/16; F16h 55/18
U.S. Cl. 324—103 R 7 Claims



A demand meter is provided with an indicator drive and positive-zero reset mechanism that is characterized by incor-

porating an anti-backlash gear assembly, which enables an indicating pointer on the meter to be reset precisely to its zero-indicating position without introducing any error into subsequent meter readings, due to relative movement between the gears of the indicating pointer drive gear train. The reset mechanism is further characterized by incorporating a simple adjusting means that is readily accessible from the front of the meter so that an operator can easily calibrate the position of the demand-indicating pointer relative to an associated indicating scale. A self-counterbalancing indicating pointer is mounted on the first dial shaft of the indicator drive gear train and is operable, in combination with the indicator drive and reset mechanism, to prevent the pointer from being moved in response to mechanical vibration of the meter.

3,763,433

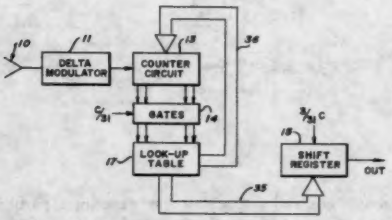
SYSTEM AND METHOD FOR DIFFERENTIAL PULSE CODE MODULATION OF ANALOG SIGNALS

David C. Nicholas, Cedar Rapids, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jan. 13, 1972, Ser. No. 217,611

Int. Cl. H04b *1/66*

U.S. Cl. 325—38 B **1 Claim**



A system for differential pulse code modulation includes a delta modulator receiving an input analog signal. The output data stream of the delta modulator is compressed by grouping it into sequential sets of predetermined size, and a binary code word is generated representative of the number of ONES in each set. This binary code word may be transmitted or the quantity of data to be transmitted may be further reduced according to either of two techniques that are disclosed. In one embodiment, the receiver decodes the transmitted data by determining the number of ONES in each original set according to the received binary code word, and then generates a new set at the receiver similar to the original set in that it has the same number of ONES and ZEROS as the original set, but they occur in a pre-assigned order that may be different than the order of the original set. The resulting bit stream is then converted to analog form by a delta demodulator.

3,763,434

BATTERY CONNECTING STRUCTURE FOR PORTABLE DEVICE

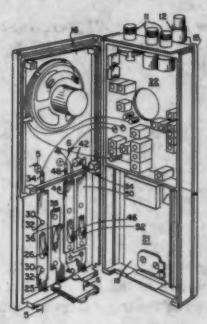
Robert Blesch, and Robert M. Galton, both of Ft. Lauderdale, Fla., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 2, 1972, Ser. No. 231,260

Int. Cl. H04b *1/08*

U.S. Cl. 325—352 **14 Claims**

Battery operated portable device having one-piece conductors for connecting the device to a rechargeable battery, with external contact portions for engaging charging contacts to permit charging while the battery is within the housing of the device. The conductors provide connections from the device to a single use battery, but do not provide connections for charging such battery, to thereby prevent damage by accidental charging. The conductor structure provides the charging connection through a diode to prevent discharge of the battery by shorting the external contact portions. A connection is provided to a control terminal of the battery, in addition to the energizing terminals. The conductors are single



flat strips having a resilient portion for engaging a contact of the battery, an integral contact for engaging the charger contact and an integral tab for connection to the energized device.

3,763,435

CIRCUIT FOR DECIDING ABOUT THE POSITION OF THE REPETITION FREQUENCY OF SIGNAL TRANSITIONS IN AN INPUT SIGNAL

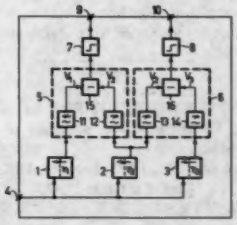
Benedictus Timotheus Johannes Holman, Emmasingel, Eindhoven, Netherlands

Filed Apr. 13, 1972, Ser. No. 243,593

Claims priority, application Netherlands, Apr. 17, 1971, 7105201; Mar. 18, 1972, 7203658

Int. Cl. H03b *3/04*

U.S. Cl. 328—140 **7 Claims**



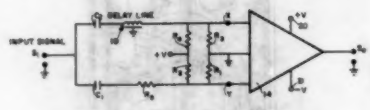
In deciding about the position of the repetition frequency of signal transitions in an input signal, ambiguities occur when these decisions are made on a frequency base or on an amplitude base. Unambiguous decisions are made in a decision circuit acting on a time base. This circuit includes a number of monostable relaxation generators having different relaxation periods, while the outputs of said relaxation generators are connected to a cascade circuit of a combination network and a smoothing filter. A threshold circuit connected to the cascade circuit provides the desired decision signal. In this decision circuit, the limits of the frequency interval may be adjusted electronically without modifying the relaxation periods of the relaxation generators.

3,763,436

AMPLITUDE INDEPENDENT TIME OF ARRIVAL DETECTOR

Wally Haw, Fallbrook, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 27, 1971, Ser. No. 212,192
Int. Cl. H03k 5/20
U.S. Cl. 328—147 **1 Claim**



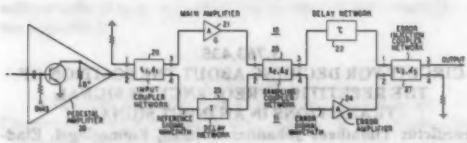
A circuit for generating an output pulse with a precise time of occurrence relative to the input trigger signal regardless of varying amplitudes of the input trigger signal.

3,763,437

FREQUENCY-SHAPED AMPLIFIER WITH PEDESTAL AMPLIFYING STAGE

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 15, 1972, Ser. No. 234,782
Int. Cl. H03f 3/60
U.S. Cl. 330—53 **7 Claims**



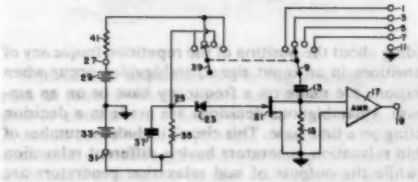
It often occurs that the gain characteristic of an amplifier that is frequency-shaped to correspond to some particular equalization function, differs materially, at the lower frequencies, from the loss characteristic sought to be equalized. The task of matching these two characteristics over a band of interest is shown to be eased by cascading a pedestal amplifying stage and a frequency-shaped amplifying stage and partitioning the overall amplifier gain between the pedestal amplifying stage and the frequency-shaped amplifying stage.

3,763,438

FAST RECOVERY CIRCUIT FOR AC AMPLIFIER

Gary L. Towne, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 23, 1971, Ser. No. 183,036
Int. Cl. H03f 1/00
U.S. Cl. 330—185 **4 Claims**



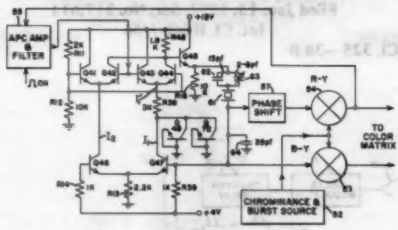
A selector switch is operable to apply one of a plurality of input signals to a high impedance AC amplifier through a coupling network. A switching means is coupled to the selector switch for effecting the charging of a charge storage means during the elapsed time in switching from one position to another. The storage means being charged generates a charging signal which controls a switching device. The switching device is operative in response to the charging signal, to apply a relatively low impedance path across the input of the AC amplifier whereby to substantially reduce the response time of the AC amplifier.

3,763,439

VOLTAGE CONTROLLED OSCILLATOR FOR INTEGRATED CIRCUIT FABRICATION

William Pell, North Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,443
Int. Cl. H03b 3/04, 5/36
U.S. Cl. 331—8 **5 Claims**



A voltage controlled oscillator is described particularly suited for APC and AFC applications and having a wide phase shift control range. The oscillator is adapted for IC fabrication with a minimum "pin" count and a minimum of outboarded components. The active portion of the circuit takes the form of a modified four-quadrant multiplier, with an external high Q resonant circuit being coupled in a feedback path between a load common to two upper rank transistors and the input to one lower rank transistor. The D.C. control voltage is applied as an interbase potential to the upper rank transistors to control the current in the right and left branches of the multiplier, and a phase shift network is inserted in one branch to restrict the phase difference between the two branches to less than 180°, or typically 135°. Controlled parasitic delays introduce additional delay in the active circuit approximately equal to one half this phase difference. These provisions insure a regenerative condition and prevent pulling of the resonant circuit in either the direction of excessive phase advance or phase delay. The phase shift range exceeds 90°, typically equalling the phase difference between the current in the two branches.

3,763,440

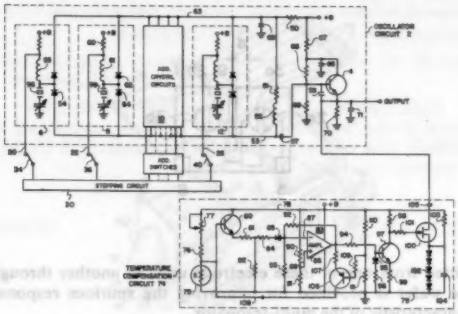
TEMPERATURE COMPENSATED SIGNAL GENERATION CIRCUIT EMPLOYING A SINGLE TEMPERATURE SENSING ELEMENT

Hernando Javier Garcia, San Francisco, Calif., and Benjamin Roger Peek, Garland, Tex., assignors to Integrated Systems Technology, Inc., Garland, Tex.

Filed Apr. 24, 1972, Ser. No. 246,627
Int. Cl. H03b 3/04, 5/36
U.S. Cl. 331—66 **10 Claims**

A signal generation circuit includes a crystal oscillator for generating an oscillatory signal and a temperature compensation circuit coupled to the oscillator for controlling the capacitance loading of the crystal in the oscillator. The temperature compensation circuit includes a temperature sensing device and operates to develop a first capacitance in a first

temperature range, a second capacitance which varies at a certain rate with the variation in temperature in a second temperature range, and a third capacitance which varies at a different rate with the variation in temperature in a third temperature range.



3,763,441

DEVICE FOR PHASE-SYNCHRONIZATION OF SEVERAL LASER OSCILLATORS

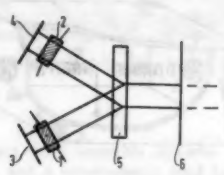
Dieter Roess, Planegg, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed June 12, 1972, Ser. No. 261,941

Claims priority, application Germany, June 29, 1971, P 21 32 281.6

Int. Cl. H01s *3/08*

U.S. Cl. 331—94.5 **8 Claims**



A device for phase synchronization of several laser oscillators characterized by several partial laser oscillators, each of which has active material and a first reflecting mirror, being arranged with a common second reflecting mirror to complete the resonators of each partial oscillator, and an optical component which is disposed between the common second mirror and the active material of each partial oscillator for phase coherent superposing the partial waves from each partial oscillator to create a single summation wave which is phase synchronized and coherent. The optical component can be a grating or a hologram which is preferably a volume phase hologram. The device is particularly useful for providing a pumping device for a solid state laser which device uses semiconductor lasers.

3,763,442

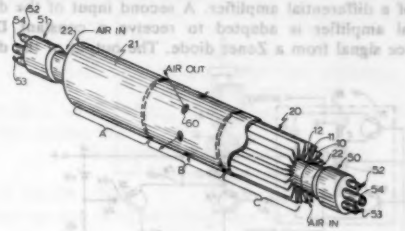
ION LASER PLASMA TUBE COOLING DEVICE AND METHOD

William H. McMahan, Winter Park, Fla., assignor to American Laser Corporation, Winter Park, Fla.

Filed July 7, 1972, Ser. No. 269,799

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 D **2 Claims**



A device and method for cooling an ion laser plasma tube are based on the utilization of a thermal conductor adapted to become fused to an ion laser plasma tube in such a manner as to efficiently transfer the heat generated to a surrounding cooling medium while mechanically adjusting to differential thermal expansion and contraction of the plasma tube.

3,763,443

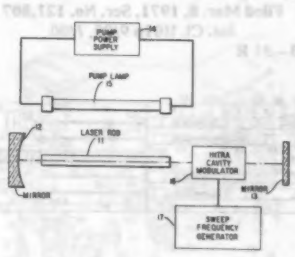
SIMULTANEOUSLY Q-SWITCHED AND MODE-LOCKED LASER

Tracy Stewart Kinsel, Bridgewater Township, and Richard Grant Smith, Basking Ridge, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 14, 1972, Ser. No. 280,570

Int. Cl. H01s *3/11*

U.S. Cl. 331—94.5 **5 Claims**



Although simultaneous Q-switching and mode-locking apparently cannot be achieved in a neodymium ion laser employing an yttrium aluminum garnet host by the conventional use of a dye cell, there is disclosed such a laser in which the desired result has been achieved by internally modulating the laser with an FM signal, the center frequency of which is detuned from the mode-locking frequency and the total depth of frequency modulation of which is sufficient to sweep the laser into a quenching condition at a limit of the frequency range. This technique avoids the losses and complications that would be incurred if separate intracavity modulators were used for Q-switching and mode-locking.

3,763,444

AMPLITUDE STABILIZED OSCILLATOR CIRCUIT

John R. Tavis, Mariposa, Calif., assignor to Tavis Corporation, Mariposa, Calif.

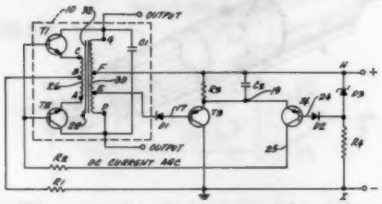
Continuation of Ser. No. 3,308, Jan. 16, 1970, abandoned. This application Oct. 1, 1971, Ser. No. 185,900

Int. Cl. H03b *3/02*

U.S. Cl. 331—109 **5 Claims**

An amplitude stabilized oscillator circuit comprising an oscillator having first and second inputs, an output, a positive feedback path between the output and the first input, and a negative feedback path between the output and second input. The amplitude of an AC signal at the oscillator output is maintained constant by controlling the current supplied to the oscillator's second input through the negative feedback path.

The negative feedback path effectively includes an AC to DC converter coupled to the oscillator output for supplying a DC signal derived from the oscillator AC output signal to a first input of a differential amplifier. A second input of the differential amplifier is adapted to receive a constant DC reference signal from a Zener diode. The output of the differential amplifier is coupled to the second input of the oscillator for controlling the DC current supplied thereto and thus the amplitude of the AC output signal. As the amplitude of the AC output signal tends to change, the DC current supplied to the oscillator's second input is inversely proportionally changed thereby stabilizing the AC output amplitude.



3,763,445

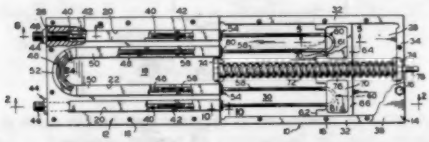
VARIABLE LENGTH TRANSMISSION LINE

David A. Hannaford, Beaverton, and Cornelis T. Veenendaal, Milwaukie, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 8, 1971, Ser. No. 121,807

Int. Cl. H01p 9/00, 1/00

U.S. Cl. 333—31 R **8 Claims**



A pair of movable U-shaped inner conductors for portions of a transmission line each have yoke elements secured to a slide positioned in a chamber in a metal housing and parallel leg elements slidably received in the ends of corresponding stationary tubular conductors also positioned in the housing and forming inner conductors of other portions of the transmission line. Two of the stationary conductors have other ends terminating in external connectors at one end of the housing and a third stationary conductor is U-shaped to provide a continuous inner conductor between the conductors. The casing is the outer conductor for the transmission line and has inner conducting wall surfaces spaced predetermined distances from the different portions of inner conductor to provide a substantially uniform characteristic impedance along the transmission line. A rotatable worm member journaled in the casing and threaded through the slide is rotatable to move the slides and U-shaped movable conductor members relative to the housing and stationary conductor members to vary the length of the transmission line.

3,763,446

HIGH FREQUENCY MULTI-RESONATOR OF TRAPPED ENERGY TYPE

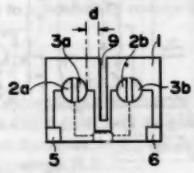
Isao Toyoshima; Hideki Ishiyama, and Kazuhiro Watanabe, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Otokuni-gun, Kyoto-fu, Japan

Filed Mar. 31, 1972, Ser. No. 239,942

Int. Cl. H03h 9/02, 9/32

U.S. Cl. 333—72 **15 Claims**

A high frequency piezoelectric multi-resonator of trapped energy type for use in an electric filter circuit comprises a thin wafer and two or more electrode units disposed on the wafer wherein a barrier for preventing vibrations from being transmitted from one of these electrode units to another through the wafer is provided for improving the spurious response characteristic of the multi-resonator.



3,763,447

HIGH FREQUENCY HELICAL FILTER

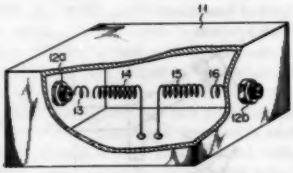
Akira Takahashi, Saitama-ken, and Senji Yokokawa, Yamagata-ken, both of Japan, assignors to Yagi Antenna Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1971, Ser. No. 208,622

Claims priority, application Japan, Dec. 16, 1970, 45/112174; Mar. 25, 1971, 46/17082; Mar. 23, 1971, 46/19664

Int. Cl. H03h 7/10, 9/00

U.S. Cl. 333—73 R **7 Claims**



A high frequency helical filter comprising a conductor case; an input coupling helix; an output coupling helix; and resonance means having a plurality of resonance helixes linearly arranged end to end between said input and output coupling helixes, each of said resonance helixes having an electrical length equal to $\lambda/4$ (λ represents the length of an electromagnetic wave being filtered), wherein the facing ends of the adjacent resonance helixes of said resonance means are separately connected or grounded to said conductor case or not grounded at all.

3,763,448

ELECTROMAGNETIC RELAYS

John Mary Walters, 18 Barton Drive, Dublin, Ireland

Filed Mar. 29, 1972, Ser. No. 239,187

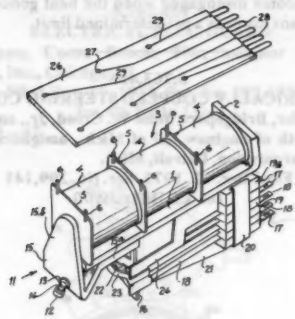
Claims priority, application Great Britain, Apr. 2, 1971, 8,579/71

Int. Cl. H01h 47/04

U.S. Cl. 335—135 **9 Claims**

An Electromagnetic relay having a modular coil formed by a number of independent coil modules. The relay is also provided with movable contact units which includes a number of

contact sets. Each contact set having at least one pair of contact arms namely a movable contact arm and a fixed contact



arm. A removable rest plate for the contact arms is provided in order that the contact arms of each contact set may make or break in a predetermined sequence.

3,763,449

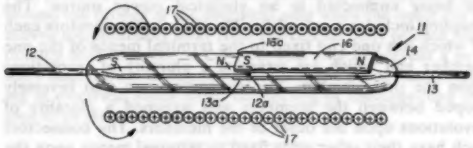
SEALED CONTACT RELAY ASSEMBLY

David B. Kimball, Shreveport, La., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 13, 1972, Ser. No. 306,031

Int. Cl. H01h *51/28*

U.S. Cl. 335—151 9 Claims



A sealed contact relay assembly includes a resilient ferromagnetic reed, and a nonmagnetic reed having relatively high electrical conductivity, which extend through opposite ends of a sealed nonmagnetic envelope and which have slightly overlapped inner contact portions within the envelope. A ferromagnetic member is mounted outside the envelope such that energization of a coil produces magnetic forces of appropriate polarity in the resilient ferromagnetic reed and the ferromagnetic member so as to cause the inner contact portion of the ferromagnetic reed to disengage from, or engage with, the inner contact portion of the nonmagnetic reed, depending upon their initial relative positions. The sealed envelope is positioned in a spool on which the coil is wound, and the opposite ends of the spool are filled with nonmagnetic encapsulating material to anchor the envelope and projecting portions of the reeds in fixed positions.

3,763,450

ELECTRIC HOLDING MAGNET SERVING AS TRIPPING DEVICE FOR GROUND LEAKAGE CIRCUIT BREAKERS

Peter Flohr, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

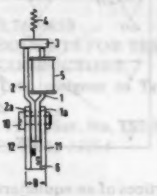
Filed Nov. 15, 1971, Ser. No. 198,796

Claims priority, application Germany, Nov. 18, 1970, P 20 56 627.2

Int. Cl. H01h *47/24*

U.S. Cl. 335—174 5 Claims

The two legs of a holding magnet for ground leakage circuit breakers are arranged in juxtaposition and form a magnetic shunt. A permanent magnet at one end of the legs and the legs at such end are disposed between two pole pieces. Each of the pole pieces contacts a corresponding one of the legs and a corresponding pole face of the permanent magnet. Both pole pieces comprise a magnetic material having a higher magnetic saturation than the material of the legs.



3,763,451

CONTROL UNIT FOR ELECTRONIC SYSTEMS

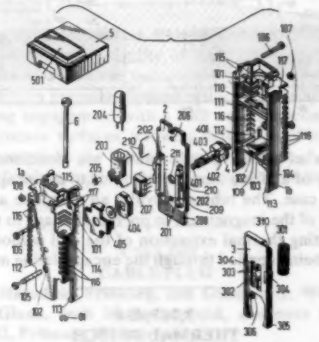
Horst Morgott, and Dieter Schmalzl, both of Munich, Germany, assignors to Siemens Aktiengesellshaft, Berlin and Munich, Germany

Filed Nov. 30, 1972, Ser. No. 310,765

Claims priority, application Germany, Dec. 15, 1971, P 21 62 306.3

Int. Cl. H01h *13/14, 36/00*

U.S. Cl. 335—206 20 Claims



A control unit for electronic systems adapted for several control functions by selectively exchanging individual parts in an otherwise standardized construction adapted to be manufactured and assembled according to mass-production techniques utilizing interchangeable prefabricated elements. A printed circuit conductor plate is mounted in a housing comprised of a pair of identical complementary half members. A slide member is operable reciprocably in the housing to operate a switch wheel arranged to be driven step-by-step to operate a magnetic shunt and affect inductive switching elements on the conductor plate. The unit is adapted to be plugged into a supporting receptacle on a control panel.

3,763,452

COLOR TELEVISION PICTURE TUBE APPARATUS

Hiroshi Ikeuchi, Yokohama, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1971, Ser. No. 176,560

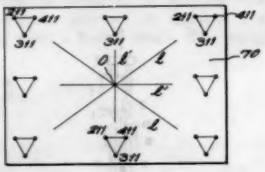
Claims priority, application Japan, Sept. 9, 1970, 45/79095

Int. Cl. H01f *5/00*

U.S. Cl. 335—213 7 Claims

A color television picture tube apparatus which displaces the electron beam dispersing position in the plane of deflec-

tion center of the delta gun shadow mask type color cathode-ray tube in which three electron guns are positioned respectively at the vertices of an equilateral triangle so that the beam spot from each electron gun is incident upon each vertex of the equilateral triangle on the screen of the cathode-ray tbe.



3,763,453

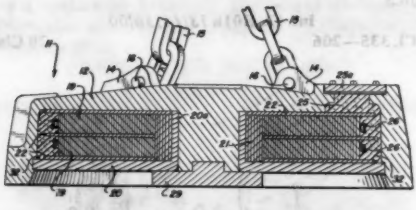
COMPRESSIBLE AIR GAP MEANS COMPENSATING FOR THERMAL EXPANSION OF A LIGHTING MAGNET COIL

Charles Allan Schurr, Shaker Heights, Ohio, assignor to Square D Company, Park Ridge, Ill.

Filed Feb. 22, 1972, Ser. No. 228,077

Int. Cl. H01f

U.S. Cl. 335—292 **5 Claims**



Lengths of sealed plastic tubing are positioned circumferentially of a lifting magnet coil prior to its encapsulation in a magnet case. The tubing provides an air space at the outer periphery of the magnet coil to prevent damage to the magnet by permitting thermal expansion of the coil without substantial force being applied through the encapsulating material.

3,763,454

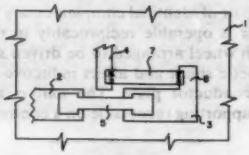
THERMAL SWITCH

Raymond A. Zandonatti, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 22, 1972, Ser. No. 228,097

Int. Cl. H01h *37/76*

U.S. Cl. 337—404 **8 Claims**



A thermal switch is provided on an insulating support member which includes conductive means carried thereby with two of the conductive means defining stationary contact means at ends thereof spaced from each other. Movable contact means has one end secured to one of the stationary contact means and the free end thereof extends over the other of the stationary contact means. Resistive means has one end connected to one of the two of the conductive means and another end connected to a further conductive means. Means is provided between the stationary contact means and the free end of the movable contact means maintaining the contact means in electrical engagement and to cause the contact means to become disengaged when the heat generated by the resistive means exceeds a predetermined limit.

3,763,455

ELECTRICALLY COUPLED STEERING COLUMN

Dale E. Confer, Bridgeport; John W. Creed, Jr., and Harold V. Elliott, both of Saginaw, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 17, 1971, Ser. No. 209,141

Int. Cl. H01r *39/00*

U.S. Cl. 339—3 S **3 Claims**

In a preferred form, this disclosure relates to an electrical coupling for use with a device having a rotatable member and a non-rotatable member concentric with the rotatable member and in which one of the members has terminal means for being connected to an electrical power source. The coupling includes a pair of flexible electrical connectors each of which has one end fixed to the terminal means of the one member and which are wrapped a plurality of revolutions upon the one member. The connectors are also reversely looped between the members and wrapped a plurality of revolutions upon the other of the members. The connectors each have their other ends fixed to terminal means upon the other member whereby electrical continuity between the members is maintained through a plurality of revolutions of the rotatable member relative to the non-rotatable member.

3,763,456

LAMPHOLDERS

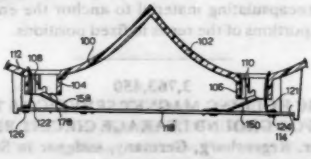
Salvatore Di Salvo, and Francesco Guglielmino, both of Turin, Italy, assignors to Fiat Societa Per Azioni, Turin, Italy

Filed Jan. 10, 1972, Ser. No. 216,399

Claims priority, application Italy, Jan. 14, 1971, 67119 A/71

Int. Cl. H05k *1/02, 1/16*

U.S. Cl. 339—17 D **7 Claims**



A lampholder on which a plurality of lamps can be mounted, in which a printed circuit board is used to make electrical connections to all the lamps in the lampholder from a single connection point of the board to which all the external connections can be made by a single connector having a plurality of contacts. The board may be mounted on the lampholder which may include integral reflectors and lamp

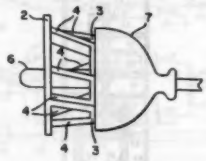
sockets. On the printed circuit board there are mounted various contact blades for making electrical contact with the plug ends of lamps inserted into the sockets.

3,763,457

ELECTRICAL PLUG GUARD

Walt Whippo, Cocoa Beach, Fla., assignor to Product Horizons, Inc., Chicago, Ill.

Filed Nov. 17, 1971, Ser. No. 199,638
Int. Cl. H01r 13/44
U.S. Cl. 339—42 9 Claims



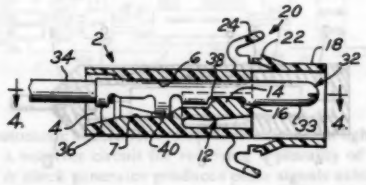
An electrical plug guard comprising a flat disc, a central body portion, slots therein for receiving and frictionally holding the prongs of an electrical plug, an outer rim to extend radially beyond the periphery of the plug when the disc is placed adjacent thereto by inserting the prongs through the slots in the said central body portion of the disc, resilient electrically non-conductive ribs extending from and around said central body portion joining it resiliently to said outer rim, said resiliently joining ribs permitting longitudinal movement of the outer rim away from the central body portion when pressure is applied against the rim and permitting return of said outer rim back to the plane of the central body portion when such pressure is released, said ribs providing a protective cage around the prongs of the electrical plug when the outer rim is moved longitudinally away from the central body portion frictionally held adjacent to the electrical plug to prevent a person's fingers from accidentally touching the prongs and resulting in electrical shock when connecting or disconnecting the plug to an electrical outlet.

3,763,458

TERMINAL RETAINING CONNECTOR BLOCK

Anthony J. Taormina, Detroit, and Willard B. McCardell, Jr., Madison Heights, both of Mich., assignors to Essex International, Inc.

Filed Mar. 8, 1968, Ser. No. 711,675
Int. Cl. H01r 13/48
U.S. Cl. 339—59 R 19 Claims



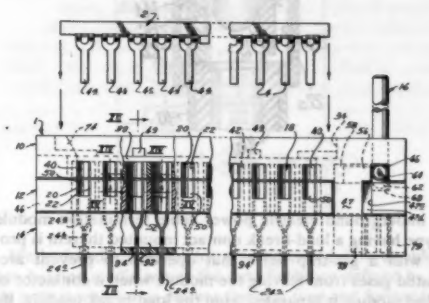
A new and improved terminal retaining connector block. A resilient tang is provided in a housing passage of the block. When an electrical terminal is inserted in the passage, the tang is depressed by the terminal and then snaps back into a recess in the terminal, locking the terminal in the passage and urging the terminal into firm contact with a wall of the passage shaped to fit the terminal. The terminal further includes projections which orient the terminal to provide for both the initial and final alignment of the recess and the tang. The tang may be depressed to remove the terminal. Another housing similar in structure and including a mating terminal is coupled to the first housing whereby the terminals are connected to complete an electrical circuit.

3,763,459

PLUG-IN TYPE SOCKETS FOR TESTING SEMICONDUCTORS

Edwin G. Millis, Irving, Tex., assignor to Textool Products, Inc., Irving, Tex.

Filed June 17, 1971, Ser. No. 153,995
Int. Cl. H01r 13/54
U.S. Cl. 339—75 M 18 Claims



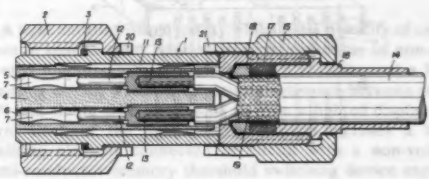
A plug-in type socket for making a temporary electrical connection between a plurality of leads on a semiconductor and contacts of a suitable test circuit without applying substantial insertion pressure. Spaced resilient contacts are urged into gripping engagement with a lead on a semiconductor by movable concave surfaces, allowing deflection of the contact after engagement by the lead to assure that each of a plurality of leads is firmly gripped between a plurality of sets of contacts.

3,763,460

CABLE PLUG

Rudolf A. Hatschek, Fribourg, and Gunther G. Witzke, Villars-sur-Glane, both of Switzerland, assignors to Vibro-Meter AG, Fribourg, Switzerland

Filed Sept. 24, 1971, Ser. No. 183,587
Claims priority, application Austria, Sept. 25, 1970, 118702
Int. Cl. H01r 13/54, 33/12, 11/22
U.S. Cl. 339—89 M 3 Claims



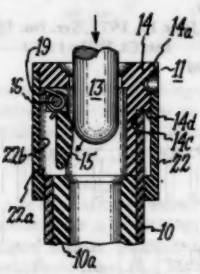
A cable plug for electric lines, in particular for use in measuring and monitoring systems with piezoelectric signal generators, comprising a plug casing having an insulation insert provided with bore holes, each bore hole containing a prestressed radially resilient twin-sleeve, one end there-of receiving a contact pin provided at the end of the cable conductor, while a connection pin can be inserted into their other end.

3,763,461

ELECTRIC CABLE TERMINATION MODULE HAVING A GAS-TRAP VALVE

Edward J. Kotski, Pittsfield, Mass., assignor to General Electric Company, N.Y.

Filed July 8, 1971, Ser. No. 160,798
Int. Cl. H01r
U.S. Cl. 339—111 14 Claims



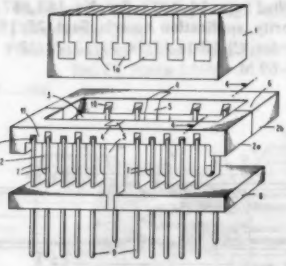
An underground electric power cable termination module of a type having a load-break contact mounted therein is provided with a gas-trap valve that operates to prevent arc-generated gases from leaving the module when a contactor of a second module is separated from the load-break module. By thus trapping hot, ionized gases within the load-break module, the risk of a re-strike between the separated contacts, or between one of the contacts and an electrical ground shield on one of the modules is substantially eliminated.

3,763,462

CONTROL WIPE ELECTRICAL CONNECTOR FOR CIRCUIT CARDS

Mario Enrique Ecker, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,663
Int. Cl. H05k *1/07*
U.S. Cl. 339—176 MP 10 Claims



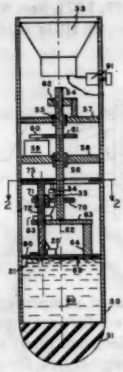
An electrical connector is provided which prevents damage to the edge of the card by the contact points during initial insertion but allows for wiping the circuit card at the contact terminal areas. The connector operates with two basic components, a resilient U-shaped element containing points for electrically contacting the circuit card and a rigid-conformal housing which controls the point of insertion at which electrical contact will take place as well as acts to hold the circuit card tightly in place after insertion.

3,763,463

SHRAPNEL SONAR

Thomas G. Muir, Austin, Tex., assignor to the United States of America as represented by the Secretary of the Navy

Filed Sept. 21, 1972, Ser. No. 291,153
Int. Cl. G01s *9/66*
U.S. Cl. 340—1 R 8 Claims



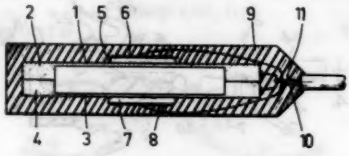
The invention provides an unique hand held device including a rotating transducer generating two high frequency signals which cause a nonlinear liquid to generate a low frequency signal which is then projected thru the liquid medium and a low pass filter in such a way as to direct the low frequency sound signal into animal tissue for the purpose of detecting foreign bodies located therein thru a return echo that is displayed on a cathode ray tube mounted in the device.

3,763,464

PRESSURE TRANSDUCER DEVICE

Jean Laurent, Saint Germain en Laye, France, assignor to Institut Francois Du Petrole Des Carburants Et Lubrifiants, Hauts-de-Seine, France

Filed Jan. 11, 1972, Ser. No. 216,963
Claims priority, application France, Jan. 19, 1971, 7101718
Int. Cl. H04b *13/00*
U.S. Cl. 340—10 7 Claims



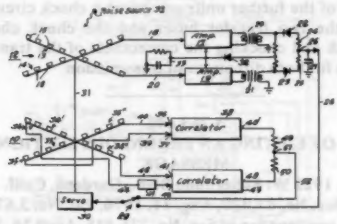
Pressure transducer device comprising two flexible plates close to and facing each other and at least one pressure transducer element fastened to a plate on the side thereof opposite to the side facing the other plate, wherein at least one of the plates is provided with a rigid peripheral reinforced portion of a greater thickness than the central portion thereof, comprising a flat base against which the second plate is pressed, and wherein both plates are held in their relative positions by means of a tight acoustically transparent coating.

3,763,465

BEARING DEVIATION INDICATOR

Robert B. Tatge, and Richard J. Wells, both of Schenectady, N.Y., assignors to the United States of America as represented by the Secretary of the Army

Filed Mar. 9, 1971, Ser. No. 122,511
Int. Cl. G01s 3/80
U.S. Cl. 340—16 R 5 Claims



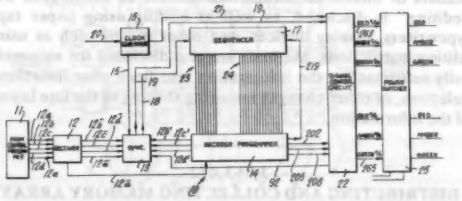
The disclosure describes an improved bearing deviation indicator for detecting and tracking noise sources such as, for example, those produced by vehicles. The device comprises a rotatable acoustic array which generates electrical analogs of the noise waves which are coupled to novel signal processing means which produce signals indicative of alignment of the acoustic array with the noise source or deviation of the acoustic array from the noise source. The signals are coupled to servo means which in response thereto rotates the array to align it with the noise source.

3,763,466

AUTOMATIC TRAFFIC CONTROLLER WITH PLURAL INPUT RECEIVER CIRCUIT

Gerald Henry Howard, Chambley, Quebec, and Gilles Gerard Guay, St. Jean, Quebec, both of Canada, assignors to Jacques George Coutellier, Chambley, Quebec, Canada

Filed Apr. 23, 1971, Ser. No. 136,938
Int. Cl. G08g 1/07
U.S. Cl. 340—41 14 Claims



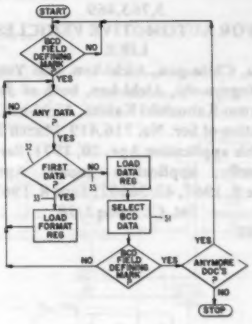
An automatic controller system for traffic signal lights comprising a receiver circuit for receiving a plurality of control pulses. A clock generator produces pulse signals exhibiting a particular frequency for enabling the various circuits. A sequencer circuit produces a plurality of output signals representative of a time count for the duration of a complete sequence cycle. A decoder-programmer circuit senses the output signals of the sequencer and generates control signals at preselected time intervals during the sequence cycle to cause sequential operation of said traffic signal lights. Synchronization means are further provided to synchronize each controller cycle at a time determined by the decoder-programmer. The sync. time may be made to occur at any time during the sequence cycle.

3,763,467

METHOD AND APPARATUS FOR READING DOCUMENTS

Kenneth W. Cash; Richard L. Dorr, and Georg N. Gaebelein, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1972, Ser. No. 250,266
Int. Cl. G06r 19/06
U.S. Cl. 340—146.3 WD 14 Claims



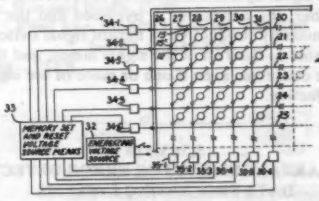
Method and apparatus for reading coded data on information bearing media where the data fields are defined by sensible indicia which also defines the data type and format indicia indicates which M of N data indicia is to be selected after sensing N data indicia.

3,763,468

LIGHT EMITTING DISPLAY ARRAY WITH NON-VOLATILE MEMORY

Stanford R. Ovshinsky, Bloomfield Hills, and Gordon R. Fleming, Pontiac, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Oct. 1, 1971, Ser. No. 185,638
Int. Cl. G06k 15/18; G08b 5/36
U.S. Cl. 340—166 EL 15 Claims



A light emitting display array which has a plurality of circuit lines in spaced apart relation to form a plurality of non-connected junctures across each of which is connected a light-emitting circuit which is selectively activated between stable ON and stable OFF conditions to form a lighted display pattern. Each of the light-emitting circuits includes a light-emitting element connected in circuit with a non-volatile semi-conductor memory threshold switching device capable of being selectively activated between high resistance current blocking and low resistance current conducting conditions which remain permanently in the semiconductor material forming the memory threshold switching device even when power is removed therefrom or the polarity reversed. Where there exist a great difference in impedence between the moemory threshold switching device used and the particular light-emitting device connected thereto, there is provided a bridge circuit arrangement to compensate for such differences, and which includes threshold isolation means to

prevent address signal information from activating undesired light emitting circuits. In the case where threshold isolation means is used it can take the form of a neon lamp or a gallium arsenide diode or the like and function as both the isolation means and the light emitting element. A display pattern can be formed on the display array either with or without operating potential applied thereto and the display array can be stored for indefinite periods of time without affecting the condition of the display pattern formed on the array.

3,763,469

FLASHER FOR AUTOMOTIVE VEHICLES AND THE LIKE

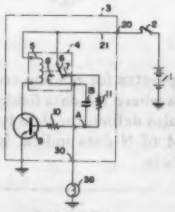
Hisashi Yonezu, Chita-gun, Aichi-ken, and Yoshihiko Kondo, Showa-ku, Nagoya-shi, Aichi-ken, both of Japan, assignors to Nippon Denso Kabushiki Kaisha, Aichi-ken, Japan

Continuation of Ser. No. 716,419, March 27, 1968, abandoned. This application Apr. 20, 1971, Ser. No. 135,803

Claims priority, application Japan, Apr. 24, 1967, 42/26131; June 8, 1967, 42/36602; June 8, 1967, 42/36603

Int. Cl. B60q *1/38*

U.S. Cl. 340—80 **9 Claims**



A flasher, for an automotive vehicle signalling system, has a flashing cycle determined by the charge-discharge time of an R-C circuit. The condenser of the R-C circuit controls the conductivity of a transistor having a relay operating coil connected in series in its collector-emitter circuit, this relay operating coil controlling transfer of normally closed contacts and normally open contacts which control connection of the lamps to the source of potential. Upon failure of a signal lamp, during turn signal operation, resulting in reduction of the load on the flasher, the condenser is bypassed and the transistor remains constantly conductive. A hazard signal switch is selectively operable to flash all of the signal lamps, and the hazard signal cycle continues even if one or more of the signal lamps become defective.

3,763,470

CIRCUIT ARRANGEMENT FOR ERROR DETECTION IN DATA PROCESSING SYSTEMS

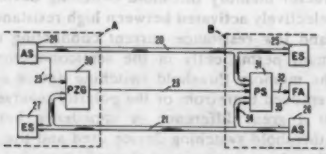
Hellmuth R. Geng, Schonaich; Johann Hajdu, Boeblingen; Petar Skuin, Magstadt, and Edwin Vogt, Boeblingen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 20, 1972, Ser. No. 219,358

Claims priority, application Germany, June 26, 1971, P 21 31 787.3

Int. Cl. G06f *11/10*

U.S. Cl. 340—146.1 AG **9 Claims**



In a data processing system, a first processing unit is connected to several other processing units by one transfer bus each for the two directions of transmission, a circuit arrangement for error detection being associated with the transfer lines. The first unit comprises a check character generator generating a parity check character both for the information to be transferred from the first processing unit to the further processing units and from the further processing units to the first processing unit. The transfer lines of both directions are provided with a common transfer path, by means of which the parity check characters generated by the check character generator are transferred from the first unit to the further units. Each of the further units comprises a check circuit connected to the two transfer buses and the check character transfer path and checking the correctness of the transferred information for both directions of transmission.

3,763,471

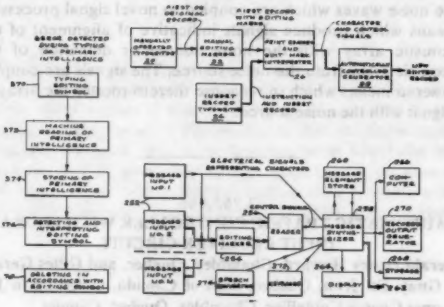
METHOD OF EDITING AN ERRONEOUS SECTION OF A MESSAGE

Ron Manly, 1922 W. El Segundo Blvd., Gardena, Calif.

Division of Ser. No. 63,020, Aug. 11, 1970, Pat. No. 3,676,856, which is a continuation of Ser. No. 275,415, April 24, 1963. This application May 1, 1972, Ser. No. 249,355

Int. Cl. G06f *11/00, 7/30*

U.S. Cl. 340—172.5 **17 Claims**



Methods and systems to avoid manually retyping or rekeyboarding textual material when revising or correcting the information contained in a record either while originally preparing the information or at a later date. The use of print readers or character recognition devices to accomplish this "editing" is disclosed, as well as editing using paper tape typewriters, display devices, and other means such as using editing instructions. Methods are also disclosed for automatically reformatting the information into lines after insertions, deletions, or other changes requiring shifting of the line layout of the information.

3,763,472

DISTRIBUTING AND COLLECTING MEMORY ARRAY AND TRANSFER SYSTEM

Richard S. Sharp, Sierra Madre, Calif., assignor to Burroughs Corporation, Detroit, Mich.

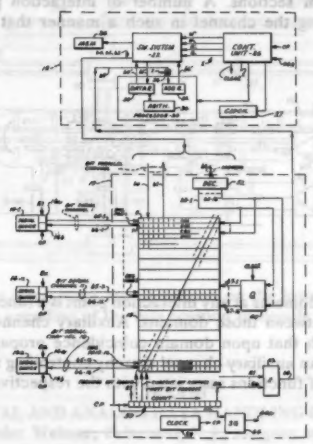
Filed Mar. 27, 1972, Ser. No. 238,189

Int. Cl. G06f *5/04*

U.S. Cl. 340—172.5 **34 Claims**

Apparatus for transferring bits of digital information between a plurality of a first bit-serial channel and a second bit-parallel channel. A matrix of bit storing cells is arranged with the cells in multiple rows and multiple columns, one row corresponding to each first channel. A first circuit establishes a serial bit transfer path between all cells in each row and the first channel corresponding to each such row. A second circuit establishes parallel bit transfer paths between the second channel and all cells in any row. Preferably, a second cell is provided in the rows and columns for each of the first men-

tioned cells. The second circuit establishes bit-parallel transfer paths into all the first mentioned cells of any row from the second channel and establishes bit-parallel transfer paths out of all the second cells of any row to the second channel. The



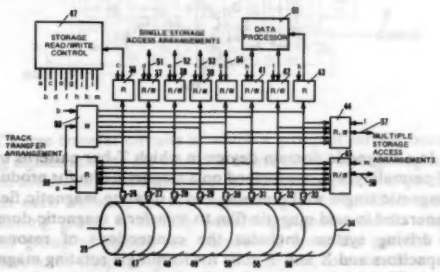
first circuit establishes a bit-serial transfer path into the second cells in each row from each of the corresponding first channels and establishes a bit-serial transfer path out of the first mentioned cells in each row to each of the first channels corresponding to each row.

3,763,473

MULTIPORT DATA STORAGE TRANSFER SYSTEM

Gerhard H. Dirks, Los Altos Hills, and Paul F. Schenck, Mountain View, both of Calif., assignors to Dirks Electronics Corporation, Sunnyvale, Calif.

Filed July 6, 1971, Ser. No. 159,982
Int. Cl. G06f *3/00, 13/04*
U.S. Cl. 340—172.5 **29 Claims**



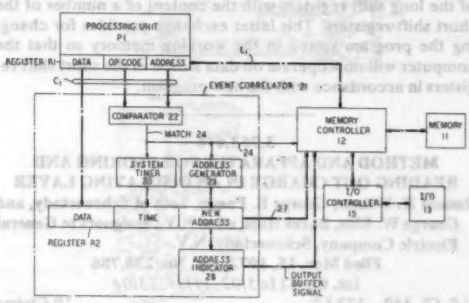
A storage device to serve as a temporary or buffer storage includes a plurality of different memory locations, data entering and data sensing devices and associated equipment permitting the individual and independent addressing of each storage location. A first set of switching circuits interrelate certain data entering and data reading devices with the storage device and a further set of switching circuits interrelate other groups of data entering and reading devices to the storage device, all of which switching circuits are individually controllable such that the associated entering and reading devices can be individually and independently placed in an active state at different or the same times. Individual terminals or ports are also provided interconnecting the various switching circuits with peripheral equipment, e.g., CRT displays, magnetic tape, and data processing equipment.

3,763,474

PROGRAM ACTIVATED COMPUTER DIAGNOSTIC SYSTEM

Richard Don Freeman, Madison, and Lawrence John Loporcaro, Rockaway Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 9, 1971, Ser. No. 206,276
Int. Cl. G06f *11/04*
U.S. Cl. 340—172.5 **1 Claim**



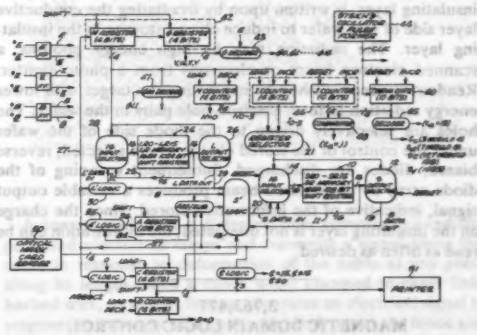
A hardware diagnostic system is utilized to gather data on the real-time operation of software programs in a multiprocessor computer system. The system is activated by request instructions planted in the processor's programs at those locations which the programmer wishes to monitor. Upon detecting one of the request instructions, the system acts essentially independent of processor control to gather information concerning when and which processor acted upon the request instruction. The processing system continues its data processing while the diagnostic system handles the monitoring request.

3,763,475

STORED PROGRAM COMPUTER WITH PLURAL SHIFT REGISTER STORAGE

Stanley P. Frankel, Los Angeles, and Francis Robert Monroe, Woodland Hills, both of Calif., assignors to TallyMate Corporation, Newport Beach, Calif.

Filed Apr. 12, 1972, Ser. No. 243,300
Int. Cl. G06f *13/02*
U.S. Cl. 340—172.5 **23 Claims**



A stored program computer is disclosed which comprises a working memory including a plurality of short shift registers each of which has its output connected to its input to provide for normally recirculating its content without change. Instructions and data are stored in specified locations of the short shift registers and the computer operates during a nonexecute cycle of the short shift registers to read an instruction from a

selected one of the short shift registers and to perform the instruction during an execute cycle of the computer. The computer further comprises a bulk memory including a plurality of long shift registers each of which has its output connected to its input to provide for normally recirculating its content without change. The capacity of each long shift register is equal to the capacity of a number of short shift registers. One of the instructions stored in the short shift registers of the working memory is operable during a number of execute cycles of the computer to exchange the content of a selected one of the long shift registers with the content of a number of the short shift registers. This latter exchange provides for changing the program stored in the working memory so that the computer will now operate on data stored in the short shift registers in accordance with the new program.

3,763,476

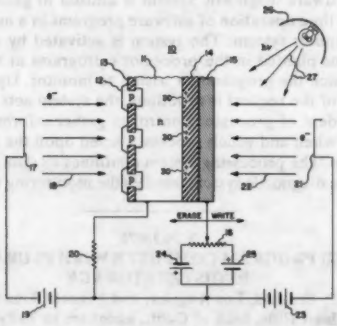
METHOD AND APPARATUS FOR STORING AND READING OUT CHARGE IN AN INSULATING LAYER

Ronald H. Wilson; George E. Possin, both of Schenectady, and George W. Ellis, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 15, 1972, Ser. No. 234,786

Int. Cl. G11c *5/02, 11/34, 13/04*

U.S. Cl. 340—173 LS **10 Claims**



A diode storage array, including a diode array on one face of a semiconductor wafer, an insulating layer overlying the opposite face of said wafer and a conductive layer overlying the insulating layer, is written upon by irradiating the conductive layer side of said wafer to induce charge storage in the insulating layer. The radiation may be high energy photons, a scanned electron beam or electrons from a photo-emitter. Readout is accomplished by irradiating the target with lower energy radiation to form electron-hole pairs in the wafer. The holes are selectively driven to the diode side of the wafer under the control of the stored charge where selected, reverse biased, diodes are discharged. Subsequent scanning of the diode array by an electron beam produces a variable output signal, indicative of the information stored. Since the charge on the insulating layer is not dissipated, the information can be read as often as desired.

3,763,477

MAGNETIC DOMAIN LOGIC CONTROL ARRANGEMENT

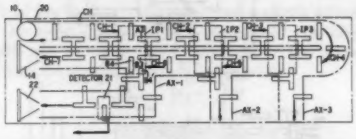
Lionel Caron, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 2, 1971, Ser. No. 168,288

Int. Cl. G11c *19/00, 11/14*

U.S. Cl. 340—174 TF **9 Claims**

A magnetic domain logic control arrangement utilizing the timed relationship of domains along a channel is realized by a magnetically soft overlay geometry which controls the movement of single wall domains in a slice of magnetic material in response to a reorienting magnetic field. The overlay geometry defines a channel essentially doubled back upon itself to form sections. A number of interaction points are spaced along the channel in such a manner that the coincidence of domains at any interaction point is a function of the distance between those domains. Auxiliary channels are arranged such that upon domain coincidence propagation occurs along an auxiliary channel thereby controlling any one of a number of functions associated with the respective auxiliary channels.



3,763,478

DRIVING SYSTEM IN MAGNETIC SINGLE WALL DOMAIN DEVICE

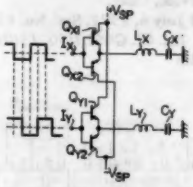
Shigeru Yoshizawa; Itsuo Mikami, both of Kodaira-shi; Genichi Kamoshita, Kodaira, and Nobuo Saito, Mitaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 27, 1972, Ser. No. 266,632

Claims priority, application Japan, June 30, 1971, 46/48334

Int. Cl. G11c *11/14, 19/00*

U.S. Cl. 340—174 TB **5 Claims**



In a magnetic domain device in which T-bar patterns made of permalloy, etc. are formed on a magnetic film for producing magnetic single wall domains and a rotating magnetic field is generated in said magetic film to transfer a magnetic domain, a driving system includes the connections of resonating capacitors and X and Y coils for forming a rotating magnetic field. The driving power for the device is much reduced by resonating the circuits comprising the coils and the capacitor at the frequency of the power source.

3,763,479

COMPUTER INPUT/OUTPUT EQUIPMENT

Alan Jebb, 14 Cheyne Close, Keston, and Colin Bowden Besant, 7 Andrews Way, Marlow, both of England

Filed Dec. 22, 1971, Ser. No. 210,763

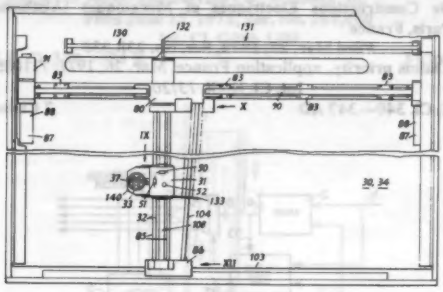
Claims priority, application Great Britain, Dec. 22, 1970, 60,860/70

Int. Cl. G01d *9/00*

U.S. Cl. 340—172.5 **23 Claims**

A digitising table unit for use with a digital computer having two parallel table surfaces with a digitising pen on the top table surface and a bug below that surface movable along *x*

and y axes by servo-motors coordinated with the pen, and retractable pen means on the bug to engage the lower table



surface to trace out a representation on the lower table surface with encoding of the bug position in signals to the computer.

3,763,480

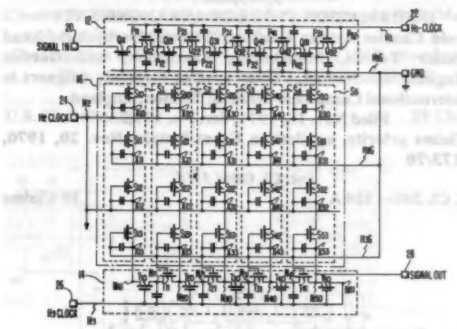
DIGITAL AND ANALOG DATA HANDLING DEVICES

Paul Kessler Weimer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,070

Int. Cl. G11c *11/40, 19/00*

U.S. Cl. 340—173 R **22 Claims**



Charge transfer circuits in which a group of serially occurring signals initially are stored in a first charge storage register; then are transferred in parallel to parallel registers to permit, after each transfer, the first register again to be filled with a following group of serially occurring signals; and in which each group of signals are transferred from the parallel registers to an output register to be read out, in series from the output register. Signals may be stored in the parallel registers for an extended period of time to provide a delay or memory function. In addition, charge transfer circuit means may be coupled to charge storage matrix arrays for forming memory arrays and to photo responsive arrays for forming image sensors.

3,763,481

FISHERMAN'S WATER TEMPERATURE LOCATING APPARATUS

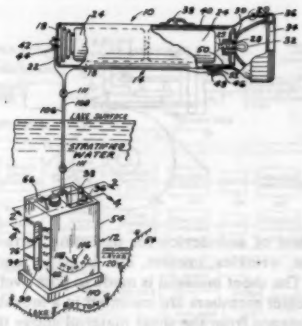
Walter Potoroks, Sr., 3505 Adams Rd., Lake Orion, Mich.

Continuation-in-part of Ser. No. 615,829, Feb. 13, 1967, Pat. No. 3,540,023. This application Nov. 9, 1970, Ser. No. 87,888

Int. Cl. A01k *97/12*

U.S. Cl. 340—227.1 **10 Claims**

Fishing apparatus for locating a desired water temperature layer in temperature-stratified fishing waters, the apparatus including submersible temperature sensing means and desired temperature signal means. In the preferred electrical embodiment, the temperature sensing means is an electrical switch having a bimetallic coil element as a temperature responsive contact, the other contact being adjustable to preselect the desired temperature, the contacts being connected by leads to the signal means comprising a modified flashlight providing a



circuit including a battery power source and a lamp. The apparatus permits preselecting the desired temperature by setting the adjustable contact and locating the desired temperature layer on the first lowering of the adjusted switch, which is normally open at surface temperatures above the preselected temperature, through the progressively colder water until the bimetal closes the switch when the desired temperature is first reached, as indicated by the lighted lamp.

3,763,482

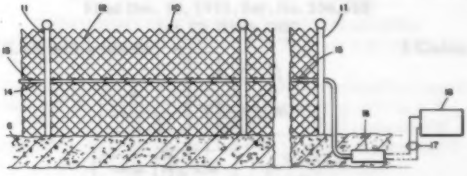
COAXIAL CABLE TRANSDUCER

Charles F. Burney, Milpitas, and Vytautas V. Pazemenas, San Jose, both of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Feb. 1, 1971, Ser. No. 111,291

Int. Cl. G08b *13/12*

U.S. Cl. 340—258 R **9 Claims**

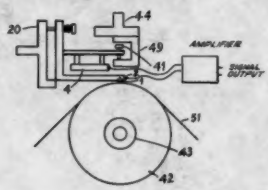


A coaxial cable with a dielectric filler comprising a radially polarized electret develops and transmits a signal along the cable in response to deformation of the cable at any point along its length. Such a cable, when clamped to chain link, barbed wire, or similar fences, generates an electrical signal in response to attempts of intruders to climb or cut the fence and transmits that signal to remote alarm equipment. Standard coaxial cable is modified to form such a transducer by heating the entire cable, applying a dc potential across the ends of the outer and inner conductors while the dielectric filler is heat-softened, cooling the cable while maintaining the electrical stress on it, and finally removing the bias voltage. Signal amplification and processing eletronics, which are connected to the cable, detect intrusions and discriminate against false alarm signals.

3,763,483
METHOD OF AND DEVICE FOR DETECTING SURFACE ELEVATIONS IN SHEET MATERIAL

Laszlo Urmenyi, London, England

Filed Sept. 16, 1971, Ser. No. 176,348
Claims priority, application Great Britain, Sept. 28, 1970, 46,025/70; Mar. 4, 1971, 05,979/71
Int. Cl. G08b 21/00
U.S. Cl. 340—259 1 Claim

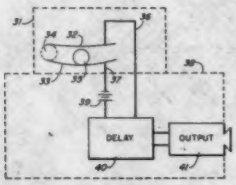


A method of and device for detecting surface elevations, like lumps, wrinkles, creases, etc. in paper and other sheet material. The sheet material is made to pass over a supporting roll and feeler members are mounted in a movable manner at a small distance from the sheet material above the supporting roll. This distance is smaller than the surface elevations to be detected and electronic means are provided to give a signal when a surface elevation lifts the feeler member, thereby changing the distance between the feeler member and an independently pivoted reference member. Means are provided to keep the distance between the surface of the sheet material and the feeler members constant, independent of inaccuracies and eccentric running of the supporting roll by providing contact members which take bearing on the supporting roll either via the sheet material or on two smaller diameter end portions of the supporting roll. By tuning the mechanical oscillatory frequency of feeler members and reference members the device can be made insensitive to vibrations of the supporting roll.

3,763,484
INERTIA-TILT SWITCH

William L. Byers, Glidden St., Newcastle, Maine

Filed Sept. 27, 1972, Ser. No. 293,009
Int. Cl. H01h 35/02; G08b 13/00
U.S. Cl. 340—262 6 Claims

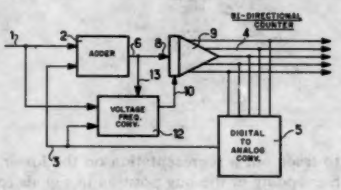


An inertia and tilt activated switch suitable for use in an alarm system, responsive to small angular and velocity deviations and capable of discriminating against false activation due to sudden jarring, bumping, or the like. A conductive ball rests in a drum-shaped housing, the floor and roof of which are electrodes normally insulated from one another. The floor electrode is slightly concave, having radius of curvature considerably greater than the diameter of the ball or the diameter of the floor electrode. The concavity allows the ball to roll into simultaneous contact with both electrodes when the housing is sufficiently disturbed from the resting orientation, thereby completing an electrical circuit. An optional delaying mechanism suppresses output from the system until the circuit has been continuously activated for a predetermined time interval.

3,763,485
ELECTRIC CONTROL SYSTEM

Gilbert Gatel, Grenoble, France, assignor to Societe Generale De Constructions Electriques et Mecaniques (Alsthom), Paris, France

Filed Mar. 27, 1972, Ser. No. 238,335
Claims priority, application France, Mar. 26, 1971, 7110853
Int. Cl. H03k 13/20
U.S. Cl. 340—347 AD 7 Claims

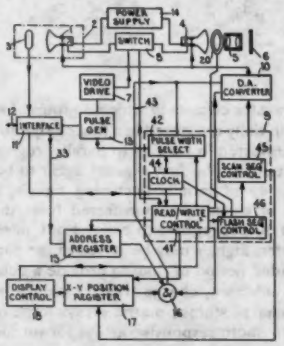


An electric control system in which a control signal is compared with a regulation signal to determine the polarity of the magnitude difference provided as a first signal, a bi-directional counter receiving a frequency signal and providing a digital output, a converter providing said regulation signal in response to said digital output and a generator providing said frequency signal in response to said first signal and a sum of said control signal and said regulation signal.

3,763,486
INFORMATION STORAGE ARRANGEMENTS

Harold Charles Arthur Hankins, Glossop, Derbyshire; Imad Shakir Torsun, Manchester, Lancashire, and Gordon Hughes, Macclesfield, Cheshire, all of England, assignors to International Computers Limited, London, England

Filed Nov. 16, 1971, Ser. No. 199,230
Claims priority, application Great Britain, Nov. 20, 1970, 55,173/70
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 10 Claims



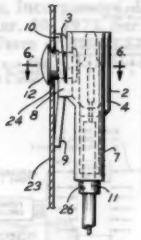
Two storage tubes, one used as a "permanent" data item store, the other as a display tube, share common power supplies and addressing arrangements. The two tubes are dark trace tubes and the beam current supply is arranged to produce writing and reading pulses of beam current which are delivered to the appropriate tube for (a) inserting new data items into the store tube and (b) for reading an item from the store tube and writing a resultant display on the display tube. The scanning of the store tube is cyclic and the data read from the store tube may produce a different display image.

3,763,487

FLUSH MOUNT INDICATOR HOUSING

Neal Houbolt, and Dominic Bucciferro, both of Joliet, Ill., assignors to Jemco Engineering Co., Minooka, Ill.

Filed June 15, 1972, Ser. No. 264,400
Int. Cl. G08b 5/00
U.S. Cl. 340—381 R **3 Claims**



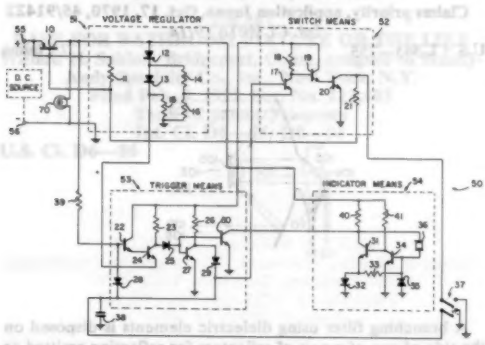
A single piece unitary housing for an electric light bulb having a flexible, biasing portion positioned on the front face of the housing. The biasing portion has elongated members, extending lonitudinally outward in opposite directions from the face of the housing, to firmly hold the housing against a support member.

3,763,488

MONOLITHIC TIMER

Charles H. Klasing, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of Ser. No. 752,576, Aug. 14, 1968, abandoned.
This application June 11, 1971, Ser. No. 152,085
Int. Cl. G08b 3/00
U.S. Cl. 340—384 E **29 Claims**



An electronic timer including a piezoelectric device having a vibratory surface from which an audible sound is radiated. The initiation of a audible sound indicates the termination of a time interval.

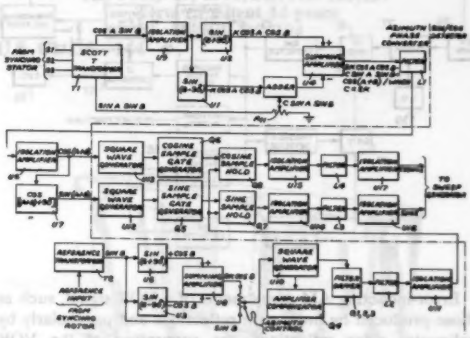
3,763,489

SYNCHRO TO SIN/COS CONVERTER

Weldon Wayne Greutman, Hicksville, Ohio, and Isaac Roger Studebaker, Fort Wayne, Ind., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 2, 1971, Ser. No. 168,246
Int. Cl. G01s 7/12, 9/02
U.S. Cl. 343—10 **6 Claims**

A synchro to azimuth sin/cos converter which converts the antenna transmit synchro information to sine and cosine waveforms. This arrangement may be used in a radar system for accurately indicating for example on a Plan Position Indicator (PPI), the azimuth orientation of the antenna, wherein the resultant converted sine and cosine waveforms are immune to noise, harmonics created in the conversion process, and frequency and amplitude variations in the synchro information and reference signals which give rise to erroneous information. The three-wire amplitude modulated fixed phase synchro stator output is converted to a two-phase phase modulated constant peak amplitude carrier by a circuit ar-



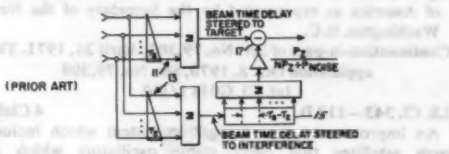
rangement employing a parallel network comprising a differentiator and an integrator which ensures immunity from undesirable variations in the synchro output. A similar network and corresponding treatment is provided the sampled reference signal (the a.c. applied to the synchro's rotor) to ensure a usable azimuth control reference waveform which is free from the effects of variations in the sampled reference which give rise to error. The treated reference waveform is then sampled by the converted carrier waveform such that the phase at which the sampling occurs changes with the antenna rotation.

3,763,490

ADAPTIVE BEAMFORMER WITH TIME CONSTANT CONTROL

Hugh W. Hadley, Skaneateles, and David W. Saum, Syracuse, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,618
Int. Cl. H04b 7/00
U.S. Cl. 343—100 SA **5 Claims**



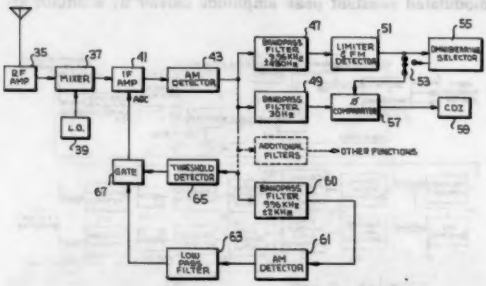
An adaptive beamformer and signal processor for sonar and other signal receptor arrays, in which beamforming is accomplished by correlation feedback loops providing matched weighting across the array. For improved performance of the adaptive beamformer thus comprised in the presence of large input transients, while preserving its steady state performance essentially unchanged, the time constant of the correlation feedback loops is placed under automatic control and adjusted thereby to prevent saturation of the loops even with large interference transients.

3,763,491

METHOD AND CIRCUITRY FOR ELIMINATING UNDESIRED MODULATION OF VOR SIGNALS

Neal H. Ishman, Springfield, Va., assignor to American Standard Inc., Falls Church, Va.

Filed July 1, 1970, Ser. No. 51,540
Int. Cl. G01s 1/46
U.S. Cl. 343—106 R 15 Claims



Error-inducting AM components of a VOR signal, such as those produced by multi-path reflections and particularly by helicopter rotor reflections, are suppressed at the VOR receiver by employing a fast AGC loop for the receiver If amplifier. The AGC amplifier is derived by employing an auxiliary filter to pass the 9.96 KHz VOR subcarrier and detecting all AM appearing on the subcarrier. Since the subcarrier should only be frequency-modulated by a reference signal, and AM components appearing on the subcarrier are undesirable. The pass band of the auxiliary filter is wider than that of the 9.96 KHz filter employed in the bearing indication circuit. The detected AM is passed through a low pass filter having a cut-off above the frequency of the undesired AM components, and the low pass filter output signal is employed as the primary AGC signal to control the gain of the receiver IF amplifier in phase opposition to the AM envelope appearing at the amplifier input. In addition, the IF output signal is applied to am amplitude threshold detector which responds to extremely high IF signal amplitudes to override the primary AGC signal and apply a supplemental AGC signal to effect rapid IF amplifier gain reduction.

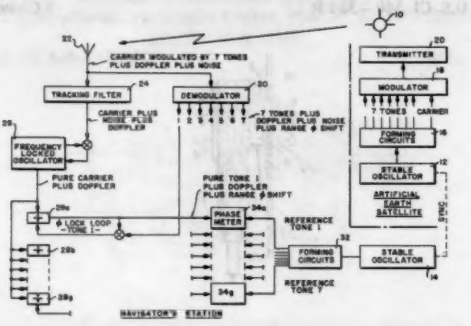
3,763,492

APPARATUS AND METHOD FOR IMPROVING SENSITIVITY OF NAVIGATION SYSTEM USING EARTH SATELLITES

Roger L. Easton, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 79,307, April 26, 1971. This application Oct. 8, 1970, Ser. No. 79,308
Int. Cl. G01s 11/00
U.S. Cl. 343—112 D 4 Claims

An improvement to a navigation system which includes earth satellites that carry stable oscillators which are synchronized with a stable oscillator at the navigator's station; the improvement consisting of means that improve system sensitivity and reduce the effectiveness of jamming by including in the receiver at the navigator's station a tracking oscillator which is locked onto the carrier frequency received from



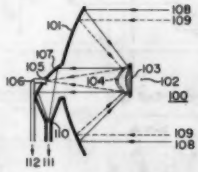
the satellite. The tracking oscillator output is frequency divided down and phase locked with the multifrequency tone signals that are also received from the satellite and then phase compared with similar multifrequency signals which are derived from the stable oscillator at the navigator's station.

3,763,493

ANTENNA DEVICE APPLICABLE FOR TWO DIFFERENT FREQUENCY BANDS

Sadakuni Shimada, Koganei-shi, Tokyo; Masaki Koyama, Sayama-shi; Hiroyuki Kumazawa, Saitama-ken, Tokorozawa-shi, and Masahiro Karikomi, Suginami-ku, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Oct. 6, 1971, Ser. No. 186,911
Claims priority, application Japan, Oct. 17, 1970, 45/91422
Int. Cl. H01q 19/14
U.S. Cl. 343—755 7 Claims

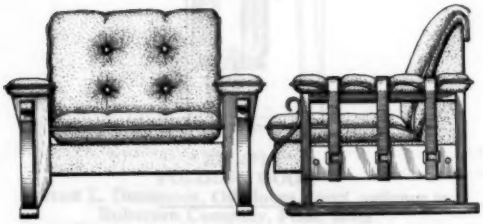


A branching filter using dielectric elements is disposed on the side of one of a pair of reflectors for reflecting emitted or incident waves, the branching filter being capable of reflecting one of the two frequency group components and of transmitting the other frequency group component to branch and converge the two components at different points.

DESIGNS

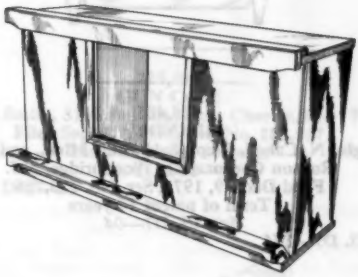
OCTOBER 2, 1973

228,480
CHAIR
George R. Branson, Dubuque, Iowa, assignor to Flexsteel Industries, Incorporated, Dubuque, Iowa
Filed Mar. 30, 1972, Ser. No. 239,859
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—69



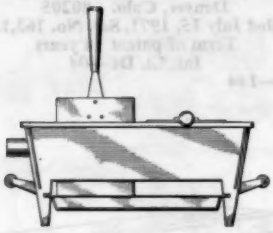
228,481
BASE FOR BATHROOM FIXTURE OR THE LIKE
Willard H. Sahloff, Bridgeport, Conn., assignor to Handy-Andy Specialty Co., Inc., New York, N.Y.
Filed Feb. 3, 1972, Ser. No. 223,405
Term of patent 3½ years
Int. Cl. D6—*06*; D8—*08*
U.S. Cl. D6—86

228,482
COMBINED BAR AND SUPPORT FOR A TELEVISION SET
Missionary E. Flemings, 2811 Clayton St., Denver, Colo. 80205
Filed July 15, 1971, Ser. No. 163,137
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—144



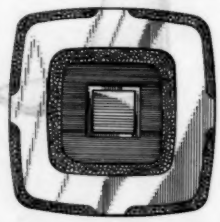
228,483
MOULDED SEAT
Harry Sebel, Bankstown, New South Wales, and Dillon Charles Furey, Kirribilli, New South Wales, Australia, assignors to Sebel Limited, Bankstown, New South Wales, Australia
Filed June 16, 1971, Ser. No. 153,908
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—197

228,484
COOKING GRILL
Edward M. Marshall, 8107 SW. 72nd Ave., Apt. 102 E, Miami, Fla. 33143
Filed Feb. 3, 1972, Ser. No. 223,388
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—110

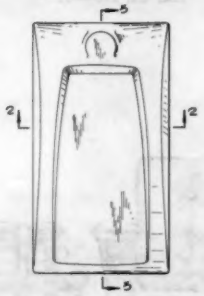


228,485
BLENDER
Douglas N. Cabell, Bloomfield Hills, Mich., assignor to Ronson Corporation, Woodbridge, N.J.
Filed Dec. 29, 1971, Ser. No. 213,786
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—154

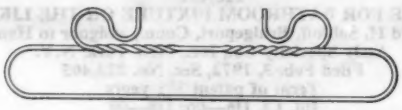
228,486
PULL
Lee Richard Chasen, Port Chester, N.Y., assignor to Coats & Clark, Inc., New York, N.Y.
Filed Dec. 23, 1971, Ser. No. 211,854
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—139



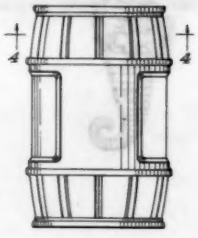
228,487
WALL PLATE FOR HOSPITAL GAS OR THE LIKE
Chester C. Perry, Grover, Mo., assignor to Stile-Craft Manufacturers, Inc., St. Louis, Mo.
Continuation-in-part of abandoned design application Ser. No. 24,922, Sept. 10, 1970. This application Aug. 11, 1971, Ser. No. 171,035
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—188



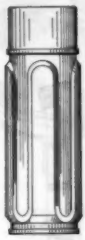
228,488
TWISTED WIRE CONCRETE FORM TIE
Robert C. Gates, Lakewood, Colo., assignor to Gates & Sons, Inc., Denver, Colo.
Filed Dec. 27, 1971, Ser. No. 212,000
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—228



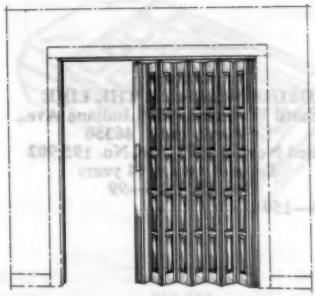
228,489
CAN OR SIMILAR ARTICLE
Carmen T. Mascia, Westmont, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 6, 1971, Ser. No. 205,467
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216



228,490
CAN OR SIMILAR ARTICLE
Richard B. Bagguley, Orland Park, and Carmen T. Mascia, Westmont, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Apr. 12, 1972, Ser. No. 243,529
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

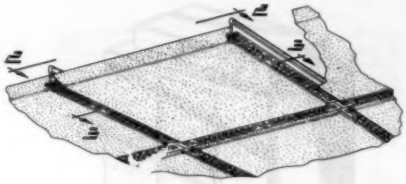


228,491
FOLDING DOOR
Forrest L. Dunsmoor, Oskaloosa, Iowa, assignor to Rolscreen Company, Pella, Iowa
Filed Mar. 29, 1971, Ser. No. 128,900
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M

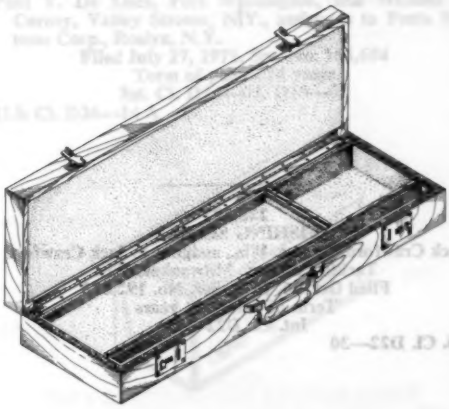


228,492
PIPETTE
Jules Barry Cohen, Brooklyn, N.Y., assignor to Medical Laboratory Automation, Inc.
Filed June 17, 1971, Ser. No. 154,262
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—2 C

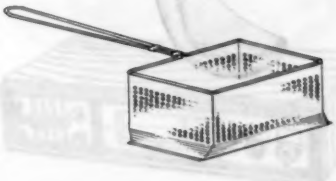
228,493
DECORATIVE SUSPENDED CEILING
Peter P. Hrusch, 1204 E. 176th St., Cleveland, Ohio 44119
Filed Feb. 12, 1971, Ser. No. 115,157
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D18—2 B



228,494
GUN CASE
Samuel Smith, 3105 June St., Lake Charles, La. 70601
Filed Sept. 21, 1971, Ser. No. 182,567
Term of patent 14 years
Int. Cl. D22—*99*
U.S. Cl. D22—13



228,495
NET FOR SCOOPING FISH
Yoshio Hirooka, 145, 1-chome, Kyomachibori, Nishiku, Osaka, Japan
Filed Feb. 11, 1972, Ser. No. 225,708
Term of patent 3½ years
Int. Cl. D22—*05*
U.S. Cl. D22—22

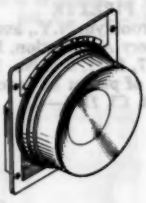


228,496
FISHING SPOON
James T. Fujita, 74 White St., Santa Cruz, Calif. 95076
Continuation-in-part of abandoned design application Ser. No. 24,952, Sept. 11, 1970. This application May 24, 1971, Ser. No. 146,606
Term of patent 14 years
The portion of the term of the patent subsequent to May 5, 1984, has been disclaimed
Int. Cl. D22—*05*
U.S. Cl. D22—29

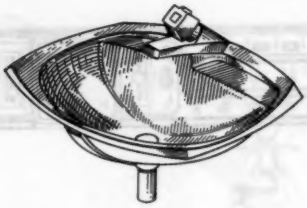
228,497
FISHING SINKER
Jack Crawford, Racine, Wis., assignor to Jack Crawford Tackle Co., Inc., Milwaukee, Wis.
Filed Oct. 26, 1971, Ser. No. 192,673
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—30

228,498
BATHTUB PLUMBING UNIT
Richard L. Ritzenthaler, Northbrook, Ill., assignor to Cranda Corp., Alden, Ill.
Filed Aug. 11, 1971, Ser. No. 171,039
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—20

228,499
DEODORIZER OR THE LIKE
Richard W. Farris, 1580 Indiana Ave., La Porte, Ind. 46350
Filed Nov. 4, 1971, Ser. No. 195,902
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—150



228,500
COMBINED LAVATORY, FAUCET AND DRAIN CONTROL
Richard L. Ritzenthaler, Northbrook, Ill., assignor to Cranda Corp., Alden, Ill.
Filed Aug. 11, 1971, Ser. No. 171,038
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58

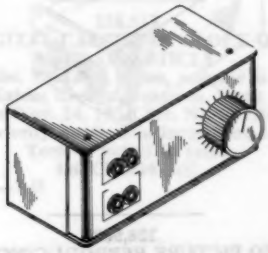


228,501
CALCULATING MACHINE
Mititaka Yamamoto, Kyoto, Koichi Yaida, Osaka, and Hisashi Maeda, Kyoto, Japan, assignors to Omron Tateise Electronics Co., Kyoto-shi, Japan
Filed Sept. 13, 1971, Ser. No. 180,240
Claims priority, application Japan Mar. 12, 1971
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

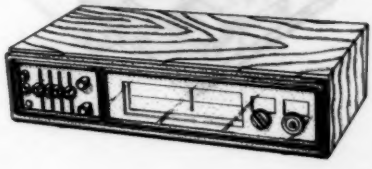
228,502
ELECTRONIC CALCULATOR
Yasuhiro Saito, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed June 9, 1972, Ser. No. 261,578
Claims priority, application Japan Dec. 14, 1971
Term of patent 7 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

228,503
STORAGE BATTERY CASE
Wilford Benson Burkett, Palisades, and Anthony Joseph Carsello, Rolling Hills, Calif., assignors to McCulloch Corporation, Los Angeles, Calif.
Filed Aug. 12, 1971, Ser. No. 171,405
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—6

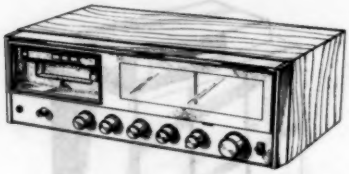
228,504
TELEPHONE TALK-LINE MONITORING SWITCH ASSEMBLY
Paul V. De Luca, Port Washington, and William V. Carney, Valley Stream, N.Y., assignors to Porta Systems Corp., Roslyn, N.Y.
Filed July 27, 1971, Ser. No. 166,654
Term of patent 14 years
Int. Cl. D14—*03;* D13—*03*
U.S. Cl. D26—14 A



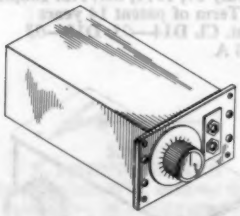
228,505
AMPLIFIER
Masanori Hamada, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 4, 1971, Ser. No. 169,151
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 L



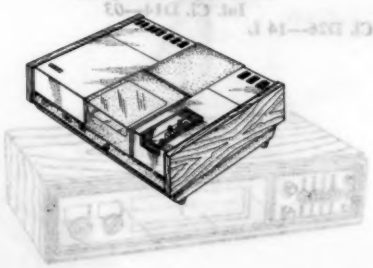
228,506
COMBINED AMPLIFIER CASSETTE TAPE RECORDER
Takeyoshi Kawano, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 4, 1971, Ser. No. 169,152
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 B



228,507
ELECTRICAL TELEPHONE TALK-LINE MONITORING SWITCH APPARATUS
Paul V. De Luca, Port Washington, and William V. Carney, Valley Stream, N.Y., assignors to Porta Systems Corp., Roslyn, N.Y.
Filed July 27, 1971, Ser. No. 166,655
Term of patent 14 years
Int. Cl. D14—*03*; D13—*03*
U.S. Cl. D26—14 A

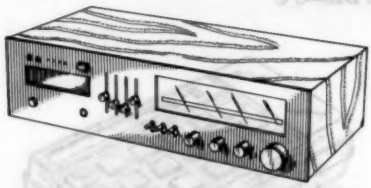


228,508
VIDEO PICTURE REPRODUCING UNIT
Yoshikuni Ohira and Masaaki Furukawa, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 25, 1971, Ser. No. 175,020
Claims priority, application Japan Apr. 19, 1971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



228,509
FOUR-CHANNEL, EIGHT-TRACK TAPE PLAYER
Richard H. Seager, Manlius, N.Y., assignor to General Electric Company
Filed Nov. 29, 1971, Ser. No. 203,119
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

228,510
AMPLIFIER
Kikuo Ohta, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed June 28, 1972, Ser. No. 266,924
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 L

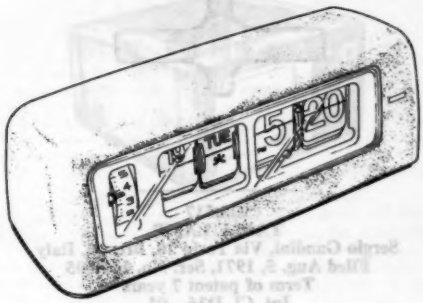


228,511
VIDEO-TAPE RECORDER
Yoshiji Kon'i, Nara-ken, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 11, 1972, Ser. No. 288,174
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

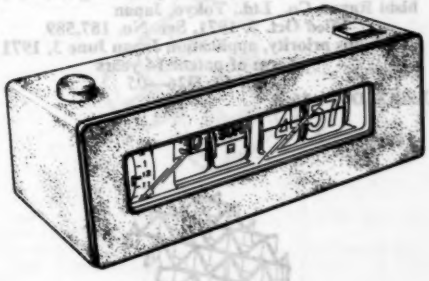
228,512
TOY SEAL
Kiyozi Asano, Tokyo, Japan, assignor to Shinsei Kogyo Co., Ltd., Tokyo, Japan
Filed Jan. 21, 1972, Ser. No. 219,920
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B

228,513
GOLF CLUB HEAD
George C. Brower, 2308 Pacific Ave., Long Beach, Calif. 90806
Filed Apr. 3, 1972, Ser. No. 240,883
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

228,514
DIGITAL CALENDAR CLOCK OR SIMILAR ARTICLE
Riki Watanabe, Tokyo-to, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan
Filed Nov. 24, 1971, Ser. No. 202,047
Claims priority, application Japan June 2, 1971
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 H



228,515
DIGITAL CALENDAR CLOCK OR SIMILAR ARTICLE
Riki Watanabe, Tokyo-to, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan
Filed Nov. 24, 1971, Ser. No. 202,048
Claims priority, application Japan June 11, 1971
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 H

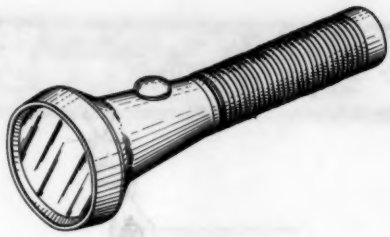


228,516
PENDANT OR THE LIKE
Wesley Michael Brooks, 4615 Holland-Sylvania Road, Apt. 38, Toledo, Ohio 43623; Clifford E. Forman, Rte. 2, Box 260, Delta, Ohio 43515; and Roger T. Markey, Rte. 1, Box 91B, Swanton, Ohio 43558
Filed Dec. 23, 1971, Ser. No. 211,849
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—16 A

228,517
TABLE LAMP
Sergio Gandini, Via Tosio 20, Brescia, Italy
Filed Aug. 5, 1971, Ser. No. 169,605
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 R

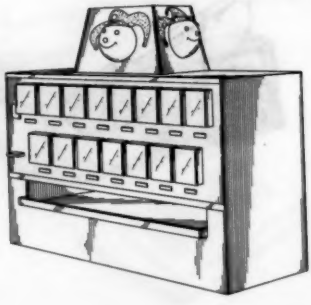
228,518
LIGHTING LOUVER
Masatsugu Nishimura and Koichi Ohnuma, Tokyo, and Mizuo Okada, Yokohama, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
Filed Oct. 7, 1971, Ser. No. 187,589
Claims priority, application Japan June 3, 1971
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 A

228,519
SEARCHLIGHT OR SIMILAR ARTICLE
Arthur H. Moore, Fairfield, Conn., assignor to The Bridgeport Metal Goods Manufacturing Company, Bridgeport, Conn.
Filed Feb. 2, 1972, Ser. No. 223,046
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A



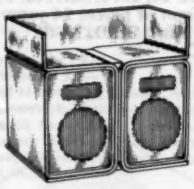
228,520
CLOTHESPIN
Hugh Llewellyn Snaith, 107 Felton Road, Carlingford, New South Wales 2118, Australia
Filed July 19, 1971, Ser. No. 164,175
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—1 F

228,521
VENDING MACHINE
Darla R. Mandell, Houston, Tex., assignor to Marrick Industries, Inc., Houston, Tex.
Filed May 4, 1972, Ser. No. 250,477
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3 R

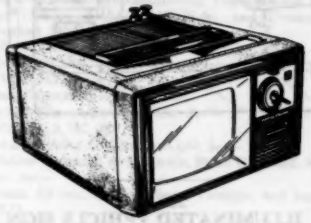


228,522
VENDING MACHINE
John D. Smith, Medford, N.J., assignor to Wellman Industries, Longview, Tex.
Filed Mar. 13, 1972, Ser. No. 234,447
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3 R

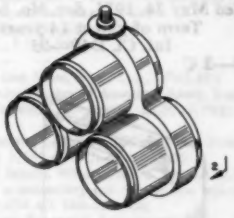
228,523
COMBINED PHONOGRAPH CONSOLE AND LOUDSPEAKER UNIT OR SIMILAR ARTICLE
Kenneth Russell Wilkes, Marcellus, N.Y., assignor to General Electric Company
Filed Apr. 29, 1971, Ser. No. 138,870
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



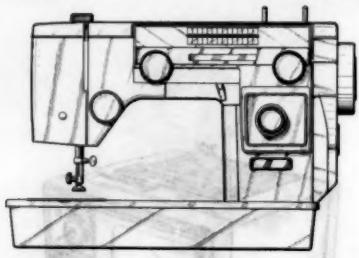
228,524
TELEVISION RECEIVER
Hiroshi Saito, Osaka, Kitaro Kimura, Suita, and Iwao Nakajima, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 22, 1971, Ser. No. 191,954
Claims priority, application Japan Apr. 22, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D



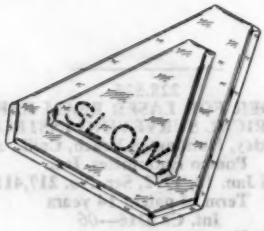
228,525
PRISM HOLDER FOR LASER BEAM REFLECTION ON ELECTRICAL SURVEYING INSTRUMENTS
James F. Buckley, Huntington Beach, Calif., assignor to Pomco Enterprises, Inc.
Filed Jan. 12, 1972, Ser. No. 217,411
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E



228,526
SEWING MACHINE
Yasuaki Yamamoto and Koji Uchida, Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed July 19, 1971, Ser. No. 164,166
Claims priority, application Japan Apr. 3, 1971
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1

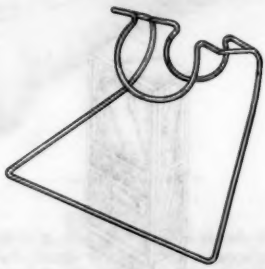


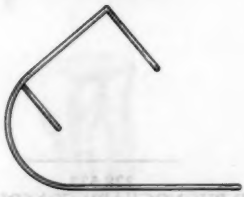
228,527
ILLUMINATED VEHICLE SIGN
Ronald N. Arnce and John Cimaroli, Jr., Portage, Wis., assignors of a fractional part interest to Alfredo Conales, Portage, Wis.
Filed Mar. 20, 1972, Ser. No. 236,543
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1 H



228,528
CLIPBOARD
Troy F. Smith, Jr., San Jose, Calif., assignor to The Mead Corporation, Talbott Tower, Dayton, Ohio
Filed May 24, 1971, Ser. No. 146,614
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D74—2 C

228,529
BABY'S BOTTLE HOLDER
Charles Ivon Bates, 20 Victoria St., Redcliffe, Western Australia, Australia
Filed Oct. 12, 1971, Ser. No. 188,641
Claims priority, application Australia Aug. 26, 1971
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—8 R





228,530
CIGARETTE CASE
Garry Kieves, Winnipeg, Manitoba, Canada, assignor to K-Tel International, Inc.
Filed Oct. 14, 1971, Ser. No. 189,489
Term of patent 14 years
Int. Cl. D27—*06*
U.S. Cl. D85—2 C

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2D DAY OF OCTOBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Sarno, Richard L., 3,762,500.
Woodcock, Thomas A., 3,761,960.

Abcor, Inc.: *See—*
Del Pico, Joseph, 3,762,566.

Abe, Jinnosuke; Watanabe, Tetsuo; Yamaguchi, Tsutomo; Fujii, Tadashiro; Matsumoto, Kunio; Shibuya, Yuzo; and Hanamitsu, Kazumi, to Toyo Jozo Kabushiki Kaisha. Enzymatio production of cephalexin. 3,763,000, Cl. 195-29.000.

Abe, Yoshihito: *See—*
Sato, Takehiko; Onishi, Yuji; Omori, Toshiji; Abe, Yoshihito; and Suehiro, Kazuyasu, 3,763,262.

Abe, Yoshio: *See—*
Horiguchi, Shojiro; Onira, Shozo; Abe, Yoshio; and Hosoda, Tohoru, 3,763,182.

Abrahams, David H.; and Graham, A. Douglas, to Dexter Chemical Corporation. Foam dyeing process. 3,762,860, Cl. 8-21.00a.

Abramovitz, Stanley. Foot massaging machine. 3,762,402, Cl. 128-33.000.

Academic Associates, Inc.: *See—*
Moore, Thomas W.; Dimeo, Frank N.; and Collins, Richard E., 3,762,420.

Accumulatorenfabrik Sonnenschein G.m.b.H.: *See—*
Jache, Otto, 3,763,416.

Acree, William L., to Burlington Industries, Inc. Continuous solvent dyeing process. 3,762,872, Cl. 8-176.000.

Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument having tone start prominence circuit. 3,762,265, Cl. 84-1.240.

Adams, Alan Douglas, to Atlas Chemical Industries, Inc. Fuel oil sludge dispersant compositions. 3,762,892, Cl. 44-72.000.

Adams, Frederick John, to Cam Gears Limited. Rack and pinion assembly. 3,762,240, Cl. 74-498.000.

Adams, Leslie R., to Motor Wheel Corporation. Molding apparatus. 3,762,677, Cl. 249-56.000.

Adams, Philip: *See—*
Merianos, John J.; Shay, Edward Griffin; Adams, Philip; and Petrocci, Alfonso N., 3,763,238.

Addressograph-Multigraph Corporation: *See—*
Ivary, David J., 3,762,324.

Adler, Franklin P., to Pullman Transport Leasing Company. Roll-in bulkhead. 3,762,341, Cl. 105-376.000.

Admiral Lock Company, mesne: *See—*
Yulkowski, Leon, 3,762,753.

Advanced Technologies, Inc.: *See—*
Morley, John D.; and Forgash, Paul, 3,762,212.

Aegidius, Poul Erik, to N.K. Verwaltungs AG. Grinder. 3,762,659, Cl. 241-199.000.

Aerojet-General Corporation: *See—*
Lucas, James M.; and Vander Wall, Eugene M., 3,762,971.

AGA Aktiebolag: *See—*
Ullstig, Stig Leopold, 3,762,793.

Agfa-Gevaert Aktiengesellschaft: *See—*
Himmelmann, Wolfgang; Roos, Ernst; and Sobel, Johannes, 3,762,926.
Hujer, Friedrich; Fengler, Harald; and Wiesbeck, Franz, 3,762,252.

Agfa-Gevaert N.V.: *See—*
Nittel, Fritz; Pollet, Robert Joseph; and Van Poucke, Raphael K., 3,762,925.
Willems, Jozef Frans, 3,762,928.

Aglitsky, Vladimir Efimovich: *See—*
Alexandrov, Adolf Moritsovich; Suladze, Ippolit Davidovich; Kantor, Ilia Solomonovich; Aglitsky, Vladimir Efimovich; Akhniashvili, Avtandil Semenovich; Tsimbler, Jury Abramovich; Lachinov, Alexandr Alexandrovich; Topolyansky, Jury Arnoldovich; Ivanov, Genndy Nikitich; and Feldman, Mark Abramovich, 3,762,665.

Ai, Mitsuo: *See—*
Nagata, Takeo; Kimura, Ichiro; and Ai, Mitsuo, 3,762,444.

Aida Engineering Ltd.: *See—*
Taniguchi, Naonori, 3,762,260.

Air Products and Chemicals, Inc.: *See—*
Green, Harold A.; and Petrella, Robert G., 3,763,098.
Holland, Dewey G.; and Polevy, John H., 3,763,207.

Aird, Alanson D., to General Electric Company. Semiconductor devices and manufacture thereof. 3,763,404, Cl. 317-234.00r.

Airtrol Corporation: *See—*
Anderson, Gordon R., Jr., 3,763,386.

Aisin Seiki Kabushiki Kaisha: *See—*
Kawabe, Tsuneo; and Kawai, Shinji, 3,762,776.

Akachi, Hisateru, to Oki Densen Kabushiki Kaisha. High speed stranded conductor production process. 3,762,150, Cl. 57-156.000.

Aker, Ludwig E., to International Harvester Company. Wheel manufacture. 3,762,012, Cl. 29-159.00r.

Akhniashvili, Avtandil Semenovich: *See—*
Alexandrov, Adolf Moritsovich; Suladze, Ippolit Davidovich; Kantor, Ilia Solomonovich; Aglitsky, Vladimir Efimovich; Akhniashvili, Avtandil Semenovich; Tsimbler, Jury Abramovich; Lachinov, Alexandr Alexandrovich; Topolyansky, Jury Arnoldovich; Ivanov, Genndy Nikitich; and Feldman, Mark Abramovich, 3,762,665.

Aktiebolaget Piab: *See—*
Tell, Peter, 3,761,996.

Aktiebolaget VOLVO: *See—*
Tamulenas, Konstantinas, 3,762,388.

Aktiengesellschaft Brown, Boveri & Cie: *See—*
Strubin, Harald, 3,762,087.

Aktieselskabet de Danske Sukkerfabrikker: *See—*
Boe, Christian Throkild; and Dawids, Steen Gamwell, 3,762,555.

Akuwa, Fumio: *See—*
Kinjo, Hisao; Akuwa, Fumio; Wada, Yoshiyo; and Suzuki, Toshi, 3,763,331.

Akzona Incorporated: *See—*
Kiladonk, Harley, 3,762,854.
Werner, Helmut; Grimm, Wolfgang; and Linhart, Heinz, 3,762,850.

Alaimo, Robert J.; and Goldenberg, Marvin M., to Morton-Norwich Products, Inc. 2-(3,4-Dichloroanilino)quinolizinium bromide. 3,763,174, Cl. 260-296.00b.

Alberti, Klaus: *See—*
Schmitz, Reinold; and Alberti, Klaus, 3,763,191.

Albisser, Anthony M., to Hospital for Sick Children, The. Method and apparatus of separating red cells from plasma in whole blood. 3,762,567, Cl. 210-532.000.

Aldrich, William E., to Warnaco Inc. Ear resistant garments and method and composition for production thereof. 3,763,078, Cl. 260-33.40f.

Aleksoff, Carl C., to Battelle Development Corporation, mesne. Time average holographic construction techniques using a modulated beam. 3,762,215, Cl. 73-71.300.

Alelio, Gaetano Francis D. Polybenzimidazoles and method of preparation. 3,763,107, Cl. 260-72.500.

Alessio, Ralph D., to Tele-Conn Enterprises, Inc. Burner ignition control system. 3,762,856, Cl. 431-66.000.

Alexander, Granison T., Jr., to Gem Oil Tool Company. Casing stand-off band for use during the running and cementing of casing in wellbores. 3,762,472, Cl. 166-241.000.

Alexandrov, Adolf Moritsovich; Suladze, Ippolit Davidovich; Kantor, Ilia Solomonovich; Aglitsky, Vladimir Efimovich; Akhniashvili, Avtandil Semenovich; Tsimbler, Jury Abramovich; Lachinov, Alexandr Alexandrovich; Topolyansky, Jury Arnoldovich; Ivanov, Genndy Nikitich; and Feldman, Mark Abramovich. Container braking device. 3,762,665, Cl. 243-38.000.

Alfred, Victor D., to Marathon Oil Company. Rotary hearth calciner having stationary soaking pit. 3,763,011, Cl. 202-100.000.

Allen Electric and Equipment Company: *See—*
Glomski, Arthur F., 3,763,421.
Heese, William E., 3,762,356.

Allen, Floyd Lee: *See—*
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Allen, Henry C., to United States of America, Army. Reaction product of phosphine oxide with carboxylic acids. 3,762,972, Cl. 149-109.000.

Allen, Jan K.; and Johnson, Logan J., to Caterpillar Tractor Company. Vibratory bulldozer. 3,762,481, Cl. 172-40.000.

Allen, Joseph C.; and James, William B., to Texaco Inc. Recovery of hydrocarbons from a secondary gas cap by the injection of a light hydrocarbon. 3,762,474, Cl. 166-250.000.

Allen, Levi, 20% to Lee, Raymond, Organization, Inc., The. Automobile viewing scope. 3,762,802, Cl. 350-307.000.

Allen, Russell G., Jr., to Hydro Corporation. Irrigating apparatus. 3,762,643, Cl. 239-212.000.

Allen, Thomas E.; and Schmitt, James L., to Caterpillar Tractor Company. Pilot operated belleville relief valve. 3,762,434, Cl. 137-489.000.

Allied Chemical Corporation: *See—*
Bhuta, Mahendra; and Sacks, William, 3,762,986.
Formaini, Robert I., 3,763,269.
Kolyer, John M.; and Kveglis, Albert A., 3,763,276.
Weedon, Gene Clyde; Collingwood, George Howard; and Winckelhofer, Robert Charles, 3,762,564.

Winckhofer, Robert C.; and Weedon, Gene C., 3,762,976.
Yodis, Anthony W., 3,763,019.
Allmanna Svenska Elektriska Aktiebolaget: *See—*
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Allred, Victor D., to Marathon Oil Company. Non concentric discharge table for rotary hearth calciner. 3,763,013, Cl. 202-103.000.
Alrac Corporation, mesne: *See—*
Tozer, Job R., 3,763,338.
Alt, Louis M.: *See—*
Knoy, Maurice G.; Alt, Louis M.; and Work, William M., 3,762,559.
Alt, Robert M.: *See—*
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Gayner, Herbert; and Smith, David A., 3,762,598.
Amada, Taro, to Yamamoto Sangyo Kabushiki Kaisha. Pipe connection with reinforced seal. 3,762,746, Cl. 285-184.000.
Amana Refrigeration, Inc.: *See—*
Bourgeois, Joseph F., 3,762,599.
Amberker, Suresh D.: *See—*
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American Chain & Cable Company, Inc.: *See—*
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American Charts Company: *See—*
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American Cyanamid Company: *See—*
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American Seating Company: *See—*
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Amin, Rajnikant B.; and Larry, John R., to Du Pont de Nemours, E. I., and Company. Solder compositions of improved active solder vehicles. 3,762,965, Cl. 148-24.000.
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Anders, Larry E., to United Aircraft Corporation. Linkage connecting means. 3,762,748, Cl. 403-156.000.
Anderson, Arthur S. Valve. 3,762,382, Cl. 123-90.670.
Anderson, Carl C.: *See—*
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Anderson, Gordon R., Jr., to Airtrol Corporation. Unit bearing motor. 3,763,386, Cl. 310-90.000.
Anderson, Joseph Axel. Anti-pollution barge and conveyer assembly. 3,762,558, Cl. 210-242.000.
Anderson, Oliver C., to DBT Manufacturing, Ltd. Gate operator. 3,762,524, Cl. 192-142.00r.
Anderson, Ralph F. Apparatus for filling moving containers. 3,762,451, Cl. 141-186.000.
Anderson, Raymond B., Jr., to Ceromet, Inc. Lock nut. 3,762,455, Cl. 151-28.000.
Anderson, William C.; and Bleeker, Raymond A., to Westinghouse Electric Corporation. Space divider system and connector assembly therefor. 3,762,116, Cl. 52-239.000.
Anderson, William S. Block copolymers as viscosity index improvers for lubricating oils. 3,763,044, Cl. 252-59.000.
Andeweg, Frits J. Candle internal illuminator and mount base. 3,762,857, Cl. 431-253.000.
Andrews, George M., to Vega Industries, Inc. Fireplace unit with controllable heat circulation. 3,762,391, Cl. 126-121.000.
Andrle, Stephen G.: *See—*
Beveridge, Thomas E.; and Andrle, Stephen G., 3,762,762.
Anner, George; and Wieland, Peter, to Ciba-Geigy Corporation. Halogenosteroids. 3,763,145, Cl. 260-239.55d.
Anonda Plastics Inc.: *See—*
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Anonima Castelli s.A.s.: *See—*
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Anthes Eastern Limited: *See—*
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Anthony, Parme G.; and Bond, David N., to General Motors Corporation. Spark plug and rotor assembly for a rotary combustion engine. 3,762,377, Cl. 123-8.010.
Anthony, Russell W., to Lear Siegler, Inc. Gear checker. 3,762,061, Cl. 33-179.50r.
Anthony, Russell W.; and Frankiw, Walter, to Lear Siegler, Inc. Automatic loader for internal gears. 3,762,270, Cl. 90-1.000.
Aqua Fem, Inc.: *See—*
Lloyd, William E.; Fuller, William J.; Fuller, William S.; and Hazen, William R., 3,762,411.
Arai, Haruhkio: *See—*
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Aristo-Werke Dennert & Pape KG: *See—*
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Armbruster, Thomas L.; and Hill, William N. Credit card. 3,762,081, Cl. 40-2.200.
Armstrong Cork Company: *See—*
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Hager, Nathaniel E., Jr., 3,763,350.
Armstrong, Laurence W.: *See—*
Garot, Lawrence F.; and Armstrong, Laurence W., 3,762,222.
Arnaud, Jacques Alexis, to Bell Telephone Laboratories, Incorporated. Adjustable beam refocuser and redirector. 3,762,794, Cl. 350-7.000.
Aronoff, Elihu J.; and Dhami, Kewal Singh, to International Telephone and Telegraph Corporation. Esters of phenyl indan. 3,763,222, Cl. 260-475.0fr.
Artama, Arvi; and Artama, Oerkki. Furnace for heating and bending glass plates for windshields and the like. 3,762,905, Cl. 65-273.000.
Artama, Oerkki: *See—*
Artama, Arvi; and Artama, Oerkki, 3,762,905.
Arth, Glen E., to Merck & Co., Inc. 3-Oxygenated-6,7-methylene-20-spiroxanes. 3,763,147, Cl. 260-239.55r.
Asahi Denko Kogyo Kabushiki Kaisha: *See—*
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Asbest- und Gummiwerke Martin Merkel KG: *See—*
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Ash, Arthur B.; Blumbergs, Peter; and Markovac, Anica. 2,6-Bistrifluoromethyl phenyl 4-pyridine carboxylic acid and derivatives thereof. 3,763,148, Cl. 260-295.00r.
Ashby, Robert M.: *See—*
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Ashikawa, Mikio; and Kamiyama, Takamitsu, to Hitachi, Ltd. Semiconductor device for scanning digital signals. 3,763,379, Cl. 307-221.00c.
Ashmead, Albert S.: *See—*
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Association of Motion Picture and Television Producers Inc.: *See—*
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Astron Dental Corporation: *See—*
Muller, Robert E., 3,762,848.
Ati, Inc.: *See—*
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Atkins, Bobby Leroy, to Dow Chemical Company, The. Copolymers of alkyl styrenes and N-vinyl heterocyclic monomers and inverse suspension polymerization using the same. 3,763,120, Cl. 260-80.00m.
Atlantic Richfield Company: *See—*
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Atlas Chemical Industries, Inc.: *See—*
Adams, Alan Douglas, 3,762,892.
Markiewitz, Kenneth H., 3,763,106.
Augustin, Werner. Trousers. 3,761,966, Cl. 2-236.000.

Austin, Peter William; and Crabtree, Allen, to Imperial Chemical Industries Limited. 1 or 4 Sulpho-aryl-6-hydroxy-2 pyridones. 3,763,170, Cl. 260-294.80f.

Automated Equipment Corporation: *See*—
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Auwerter, Jay P. Pressure reducing valve. 3,762,435, Cl. 137-505.220.

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B & K Tool & Die Corporation: *See*—
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B & L Machine Company, Incorporated: *See*—
Litchfield, Mason R., 3,762,438.

Babb, Albert L. Concatenated jacket refrigeration system for oil and gas wells. 3,762,469, Cl. 166-57.000.

Baber, Ernest Greenberry, to Du Pont de Nemours, E. I., and Company. Defect detector for a moving web. 3,763,373, Cl. 250-219.0we.

Bachofen, Willy A.: *See*—
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Badalich, Frank C.; and Watterlohn, Roy H., to Bell & Howell Company. Filmstrip projector with synchronized sound. 3,762,807, Cl. 352-17.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See*—
Hoffmann, Herwig; Lissner, Oskar; Merkel, Karl; and Scholz, Heinrich, 3,763,102.
Raff, Paul; Ritzerl, Gerhard; and Weitz, Hans-Martin, 3,763,018.

Badovinac, Peter. Flavor cup. 3,762,307, Cl. 99-532.000.

Bafford, Richard Anthony; Kamens, Ernest Rudolph; and Mageli, Orville Leonard, to Pennwalt Corporation. Addition reaction involving diperoxyfumarate and compounds having diperoxysuccinyl groups. 3,763,112, Cl. 260-78.40d.

Baggott, George T., to Crescent Metal Products, Inc. Pull-down lamp. 3,763,368, Cl. 240-69.000.

Bahnsen, Gerhard I. W. Photographic strobe light adapter. 3,763,366, Cl. 240-1.300.

Bailey, John M.; and Wells, Alan W., to Caterpillar Tractor Company. Engine bearing arrangement. 3,762,786, Cl. 308-237.000.

Bailey Meter Company: *See*—
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Bainton, Byron L. Swallow-tail fish lure. 3,762,088, Cl. 43-42.500.

Bair, Eugene C., to General Electric Company. Methods for manufacturing slotted core structures. 3,762,041, Cl. 29-596.000.

Bair, Eugene C., to Tokai Cold Forming Co., Ltd. Methods for manufacturing slotted core structures. 3,762,042, Cl. 29-596.000.

Bair, Eugene C., to General Electric Company. Apparatus and methods for handling strip material. 3,762,198, Cl. 72-28.000.

Baker, Charles L.: *See*—
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Baker, Edward A., Jr.; and Fabb, Rowland A., to Palmer-Shile Company. High density mobile storage system. 3,762,335, Cl. 140-173.000.

Baker, J. E., Company, The: *See*—
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Baker, James G., to Polaroid Corporation. Compact three component objective lenses. 3,762,801, Cl. 350-189.000.

Baker, John Kenneth: *See*—
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Baker, Theodore H.; Ghafghaichi, Majid; Stevens, Richard C.; and Tuman, Daniel, to International Business Machines Corporation. Method of testing for the operability of integrated semiconductor circuits having a plurality of separable circuits. 3,762,037, I. 29-574.000.

Bales, Joseph H.: *See*—
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Ball Corporation. *See*—
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Ball, Donald A.: *See*—
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Ballard, Alexander K. Multi-line underlining instrument. 3,762,054, Cl. 33-41.00d.

Ballard, Carlos E.; and McMillan, Thurmond D., to Reed Tool Company. Gelled nitroparaffin explosive composition containing air-entrapper plus inert weighting material. 3,762,970, Cl. 149-21.000.

Ballentine, Earle W.; and Gindes, Bernard C. Method and apparatus for inducing sleep by applying electrical pulses to plural portions of the head. 3,762,396, Cl. 128-1.00c.

Balzer, David John: *See*—
Boggs, Roger L.; Balzer, David John; and Haslett, Glenn Melvin, 3,762,778.

Bamford, Robert P.: *See*—
Hamilton, Harold E.; Bamford, Robert P.; and Pastorek, Paul V., 3,762,904.

Bangl, Donald W. Flow-through type solenoid valves. 3,762,683, Cl. 251-139.000.

Banks, Robert L., to Phillips Petroleum Company. Increasing the octane of olefinic gasolines using disproportionation, alkylation and reforming steps. 3,763,032, Cl. 208-93.000.

Bannister, Robert Henry Arthur, to Girling Limited. Railway vehicle disc brakes. 3,762,506, Cl. 188-59.000.

Banyas, John D.; and Ross, Edward A. Lubrication system for endless chain conveyors. 3,762,504, Cl. 184-15.00a.

Barasch, Werner, to Becton, Dickinson and Company. Seamless plastic articles having a textured surface. 3,761,965, Cl. 2-167.000.

Barba, Diego; Liuzzo, Giuseppe; and Tagliaferri, Giovanni, to Societa Italiana Resine S.p.A. Multi-stage flash evaporator. 3,763,014, Cl. 202-173.000.

Barbour, Denis Rigby: *See*—
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Barecki, Chester J.; and Karrip, Alexander A., to American Seating Company. Airplane seat assembly. 3,762,766, Cl. 297-217.000.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See*—
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Barnes, James H. Meat cutting and extruding device. 3,762,658, Cl. 241-82.500.

Barneveld, Dirk: *See*—
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Barnhart, Robert E.; and Doerger, Henry L., to Procter & Gamble Company, The. Transfer and accumulating apparatus. 3,762,582, Cl. 214-16.40r.

Barnowski, Henry G., Jr.: *See*—
Clarke, Gail H., Jr.; and Barnowski, Henry G., Jr., 3,762,953.

Barnum, Viola Hall, to Lee, Raymond, Organization, Inc., The. Pet sanitary litter facility. 3,762,369, Cl. 119-1.000.

Baron, Andrew, Limited: *See*—
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Barre, Marcel Jean Charles, to Societe Sucriere de l'Atlantique (Engineering). Apparatus for drying liquid-impregnated fibrous or spongy materials, especially sugar-cane bagasse. 3,762,314, Cl. 100-121.000.

Barrett, Hugh C.: *See*—
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Barringer, Anthony Rene, to Barringer Research Limited. Geophysical exploration method using the vertical electric component of a VLF field as a reference. 3,763,419, Cl. 324-6.000.

Barringer Research Limited: *See*—
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Barry, Henry F.: *See*—
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Barry-Wehmiller Company: *See*—
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Barth, Wayne E., to Pfizer, Inc. 2-Hydroxymethyl-3-hydroxy-6-(1-hydroxy-2-[3, 4-methylenedioxyphenylalkylamino]ethyl)pyridines. 3,763,173, Cl. 260-296.00b.

Bartolini, Robert Alfred; and Karlsons, Dainis, to RCA Corporation. Reduction of non-linear spatial distortion in holographic system employing different wavelengths for recording and playback. 3,763,311, Cl. 178-5.400.

Baruch, Samuel: *See*—
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Baruffa, Olindo: *See*—
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Bauman, Jack L.; and Erickson, Vedick A., to International Harvester Company. Seed dispenser for planters. 3,762,603, Cl. 221-211.000.

Baumann, Erwin; Beham, Gerhard; and Frick, Hansjorg, to Etablissement Dentaire Ivoclar. Receptacle having at least three chambers. 3,762,540, Cl. 206-47.00a.

Bausch & Lomb Incorporated: *See*—
Morton, Roger R. A., 3,763,357.
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Baxter Laboratories, Inc.: *See*—
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Beachey, Robert W. Racing game apparatus. 3,762,712, Cl. 273-130.00h.

Beare, Robert B.; and Jack, Billy Gene, to Fedders Corporation. Dry detergent dispenser. 3,762,608, Cl. 222-193.000.

Beaufort (Air-Sea) Equipment Limited: *See*—
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Beazley, Kenneth Michael; and Climpson, Margaret, to English Clays Lovering Pochin & Company, Limited. Hydraulic fluids. 3,763,046, Cl. 252-75.000.

Becht, Andrew B. Magnetic tape head cleaning apparatus. 3,761,994, Cl. 15-210.00r.

Bechtold, Max F., to Du Pont de Nemours, E. I., and Company. Hex-a(alkoxymethyl)melamine-modified hydroxylated fluoropolymer coated articles. 3,762,940, Cl. 117-76.00f.

Beck, William Donald; and Crawford, Juan Hamilton, to Ocean Systems, Inc. Volumetric gas mixing system. 3,762,428, Cl. 137-88.000.

Beck, William H.; and Cardwell, Gilbert I., Jr., to Garrett Corporation, The. Single reactor force commutated chopper. 3,763,418, Cl. 321-45.00c.

Becker, Anthony F., to DND Corporation. Flange facing machine. 3,762,246, Cl. 82-4.00c.

Becker, George A.: *See*—
Hanel, Phil G.; and Becker, George A., 3,762,979.

Becker, Roger T.; McMullin, Donald, Jr.; and Nelson, John J., to Kalamazoo Conveyor Company. Chain for flight conveyor. 3,762,535, Cl. 198-168.000.

Beckman Instruments, Inc.: *See*—
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Becton, Dickinson and Company: *See*—
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Beham, Gerhard: *See*—
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Behnke, Wilbert E., to Harris-Hub Company, Inc. Central rail bed frame with connector assembly. 3,761,971, Cl. 5-201.000.

Behrenz, Wolfgang: *See*—
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Belknap, Donald J., 27.50% to Shapiro, Nelson H. and 22.50% to Field, Milton M. Method and apparatus for making incandescent lamps. 3,762,900, Cl. 65-59.000.

Belknap, Donald J., 27.50% to Shapiro, Nelson H. and 22.50% to Field, Milton M. Miniature incandescent lamp and apparatus and method for making the same. 3,763,390, Cl. 313-315.000.

Bell & Howell Company: *See*—
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Bell Canada-Northern Electric Research Limited: *See*—
Murto, Tapio Henrikki; and Emslie, Kenneth Douglas, 3,763,326.

Bell Telephone Laboratories, Incorporated: *See*—
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Cho, Yo-Sung; and Kelcourse, Francis Charles, 3,763,359.
Di Lorenzo, James Vincent, 3,762,945.
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Beloit Corporation: *See*—
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Benda, David, to GTE Sylvania Incorporated. Cathode ray tube electron gun. 3,763,388, Cl. 313-64.000.

Bender, Louis. Punch for removing a desired segment from a paper record. 3,762,258, Cl. 83-383.000.

Benjamin, Ivan E.: *See*—
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Bennett, Clarence L., Jr.; De Lorenzo, Joseph D.; and Wilhelmsen, Harald, to Sperry Rand Corporation. Metal detector for identifying and discriminating between objects of different size, shape, orientation and ferrous content and including an auto-nulling circuit. 3,763,424, Cl. 324-41.000.

Benoy, Gaston Jacob: *See*—
Vanden Eynde, Hector Albine; Van Peucke, Karel; DeCat, Arthur Henri; and Benoy, Gaston Jacob, 3,762,921.

Bentley, Arthur P. Rotary vane internal combustion engine. 3,762,375, Cl. 123-8.310.

Bentley, Arthur P. Centrifugally operated impact and friction clutches. 3,763,979, Cl. 192-105.00b.

Bentley, Robert W.; and Cieslak, Arthur B., to Stromberg-Carlson Corporation. Guide and mounting support with positive means for captivating a printed circuit card disposed thereon. 3,762,574, Cl. 211-41.000.

Bercz, Christa V.; Rozmanith, Jolan S.; and Bercz, Jeno P., to Lurex, Inc. Fishing lure containing a chemiluminescent substance. 3,762,092, Cl. 43-17.600.

Bercz, Jeno P.: *See*—
Bercz, Christa V.; Rozmanith, Jolan S.; and Bercz, Jeno P., 3,762,092.

Beresinsky, Isaac, to Moledeth Development Company Ltd. Elevator-conveyor for bulk material. 3,762,534, Cl. 198-165.000.

Bertetta, Oscar, to Societe Anonyme a Responsabilite Limitee: Technifil. Dismountable and superposable baskets. 3,762,593, Cl. 220-6.000.

Berger, Abe: *See*—
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Bergmeyer, Hans Ulrich: *See*—
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Bergquist, George R.; and Hugyecz, Matyas, to Stromberg-Carlson Corporation. Truck circuits for electronic telephone systems. 3,763,321, Cl. 179-18.0ah.

Bergstrom, Jan Ingemar Verner, to SCA Projekt Aktiebolag, mesne. Refiner stand. 3,762,660, Cl. 241-285.00r.

Berkey Photo, Inc.: *See*—
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Berler, Robert M., to Pitney Bowes-Alpex, Inc. Unidirectional fluorescent ink imprinted coded document and method of decoding. 3,763,356, Cl. 235-61.12n.

Bernald, Ronald Lee, to Schmall, Peter. Attachment for a hand tool. 3,762,452, Cl. 147-134.00d.

Bernholz, William Francis; Nahta, Roop; and Redston, John Percy, to PVO International Inc. Apparatus for treating textile fibers in staple fiber form. 3,762,188, Cl. 68-19.100.

Bernstein, Jack: *See*—
Krapcho, John; and Bernstein, Jack, 3,763,215.

Berry, Jean-Luc, to Remy, E. P., et Cie. Method of sterlizing industrial product-dispensing plants. 3,762,874, Cl. 21-57.000.

Berstein, Jack: *See*—
Krapcho, John; and Berstein, Jack, 3,763,214.

Bertrand, Francois Robert, to Medial de Toledo & Cie. N-Disubstituted derivatives of α-amino acids. 3,763,216, Cl. 260-471.00a.

Besant, Colin Bowden: *See*—
Jebb, Alan; and Besant, Colin Bowden, 3,763,479.

Besler, Herbert C. Oxygen bottle carrier particularly for stretchers. 3,761,968, Cl. 5-92.000.

Bessette, Georges Henri. Automotive transmission. 3,762,164, Cl. 60-425.000.

Bethlehem Steel Corporation: *See*—
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Beveridge, Thomas E.; and Andrle, Stephen G. Cover and lifting mechanism for pick-ups. 3,762,762, Cl. 296-137.00b.

Bey, Alvin E.; and Heffel, James R., to Dow Corning Corporation. Aqueous dispersions of carboxyfunctional silicones. 3,763,069, Cl. 260-29.20m.

Bezu, Maurice, to Societe d'Etudes & de Realisations Electroniques. Observation instrument with panoramic vision. 3,762,795, Cl. 350-16.000.

Bhasin, Harish P., to Cenco Incorporated. Static stirrer apparatus and process. 3,762,466, Cl. 165-108.000.

Bhuta, Mahendra; and Sacks, William, to Allied Chemical Corporation. Polyamide composite film. 3,762,986, Cl. 161-227.000.

Bice, James W.; and Timm, Will; deceased (by Timm, Asta; representative), to Celesco Industries, Inc., mesne. Differential pressure transducer. 3,762,208, Cl. 73-398.0ar.

Biggar, F. M., Jr.: *See*—
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Bihun, Edward J.; and Castello, Michael, to Van Dresser Corporation. Wire mat assembly for a box spring. 3,761,972, Cl. 5-247.000.

Bilas, Michael. Wheeled vehicle suspension. 3,762,487, Cl. 180-24.090.

Bills, Alan M.: *See*—
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Bills, Alan M., to Westvaco Corporation. Alkanolamides of dicarboxylic acid. 3,763,053, Cl. 252-357.000.

Bindel, Paul H. Undulating rectal flushing apparatus. 3,762,410, Cl. 128-229.000.

Bio-Logics, Inc.: *See*—
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Birglechner, Georg, to Telefunken Patentverwertungsgesellschaft m.b.H. Method of manufacturing semiconductor component. 3,762,899, Cl. 65-42.000.

Bischoff Chemical Corporation: *See*—
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Bitzer, Frank E. Fuel injection means and process for making same. 3,762,378, Cl. 123-32.00b.

Bjorheim, Ingulf; and Steinsvy, Brynjulf. Ground heater. 3,762,171, Cl. 61-36.00a.

Bjork, Albion P.; and Conner, James M., to Polaroid Corporation. Camera system including operation sequence control. 3,763,292, Cl. 95-36.000.

Black, James A., to Superior Concrete Accessories, Inc. Self-contained, articulated, outside corner-forming device for a concrete wall form. 3,762,679, Cl. 249-194.000.

Blanchard, Stanley. Stage lighting systems. 3,763,394, Cl. 315-294.000.

Blank, Kurt, to Saint-Gobain. Quick release safety windshield. 3,762,981, Cl. 161-40.000.

Blanz, John H.: *See—*
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Bleeker, Raymond A.: *See—*
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Blesch, Robert; and Galton, Robert M., to Motorola, Inc. Battery connecting structure for portable device. 3,763,434, Cl. 325-352.000.

Blickenderfer, Charles, Jr.; Erickson, Harold E.; and Clapp, Charles C., to Weyerhaeuser Company. Coating applicator. 3,762,366, Cl. 118-262.000.

Bliss & Laughlin Industries, Incorporated: *See—*
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Block, Donald P., to FMC Corporation. Windrowing machine. 3,762,140, Cl. 56-328.00r.

Blomberg, Folke Ivar; and Tholander, Lars Helge Gootfrid, to Husqvarna Vapenfabriks Aktiebolag. Arrangement for automatically positioning a piston in an internal combustion engine. 3,762,387, Cl. 123-179.00a.

Blumbergs, Peter: *See—*
Ash, Arthur B.; Blumbergs, Peter; and Markovac, Anica, 3,763,148.

Bobst, J., & Fils, S.A.: *See—*
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Bocceda, Franco. Device for making holes in pipes. 3,762,263, Cl. 83-660.000.

Bock, Eugen: *See—*
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Bock, Gernot: *See—*
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Boe, Christian Throkild; and Dawids, Steen Gamwell, to Aktieselskabet de Danske Sukkerfabrikker. Supporting plates for the membranes of a dialyzer. 3,762,555, Cl. 210-321.000.

Boegli, Serge: *See—*
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Boehringer Ingelheim G.m.b.H.: *See—*
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Boffet, Andre; and Boffet, Pierre. Molding press for paste-like material. 3,762,852, Cl. 425-330.000.

Boffet, Pierre: *See—*
Boffet, Andre; and Boffet, Pierre, 3,762,852.

Bogdanov, Ivan G. Cultivation of lactobacillus bulgaricus to produce a ribonucleoproteid. 3,762,998, Cl. 195-28.00n.

Boggs, Roger L.; Balzer, David John; and Hazlett, Glenn Melvin, to Caterpillar Tractor Company. Track pin with vented rubber plug. 3,762,778, Cl. 305-14.000.

Bogusz, Frank J. System for monitoring contaminants in liquids. 3,762,214, Cl. 73-61.00r.

Bohnhoff, Arthur F., to General Motors Corporation. Damped and cushioned stop. 3,762,227, Cl. 74-89.150.

Boktys, Algimantas K.: *See—*
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Bolliger, Edwin, to Bobst, J., & Fils, S.A. Safety device coupling. 3,762,183, Cl. 64-29.000.

Bolza-Schuenemann, Hans-Bernhard, to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft. Folder delivery of web-fed rotary printing presses. 3,762,697, Cl. 270-6.000.

Bond, David N.: *See—*
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Borland, Walter G.: *See—*
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Borsbfield, Richard A. Methods of making sharp-edge cutting elements. 3,762,243, Cl. 76-104.00r.

Borst, John A., to Owens-Corning Fiberglas Corporation. Method and apparatus for producing fibers and environmental control therefor. 3,762,896, Cl. 65-3.000.

Bosch, Robert, G.m.b.H.: *See—*
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Bosley, Denis: *See—*
Mavins, Dennis H.; Boles, Joseph H.; Bosley, Denis; Prodger, Brian E.; Rapped, Kurt; and Schloss, Floyd E., 3,762,095.

Boss, Jack F., Jr. Movable windbreaker for steel buildings. 3,762,110, Cl. 52-63.000.

Bosselaar, Cornelis Albertus, to U.S. Philips Corporation. Guard junction for semiconductor devices. 3,763,406, Cl. 317-235.00r.

Boucherie, Gerard B. Devices for automatically shaping and profiling workpieces. 3,762,276, Cl. 90-13.000.

Bourgeois, Joseph F., to Amana Refrigeration, Inc. Trash container for trash compactor. 3,762,598, Cl. 220-63.00r.

Bourquardez, Gaston; Gouzien, Michel Jean Yves; and Mercier, Rene, to Societe Nationale Industrielle Aerospatiale. Helicopter rotors comprising a reinforced plastics hub. 3,762,834, Cl. 416-134.000.

Bowling, Charles E.; and Meginnis, George B., to General Motors Corporation. Bonding. 3,762,032, Cl. 29-493.000.

Bowman, Thomas C., to Watson-Bowman Associates, Inc. Sealing strip. 3,762,826, Cl. 404-64.000.

Boyko, Eugene S.; and Owens, Clark M., to Westinghouse Electric Corporation. Alloy and method of welding structures including this alloy. 3,762,913, Cl. 75-122.000.

BP Chemicals Limited: *See—*
Bradshaw, Christopher Patrick Cadman; and Egham, Peter Anthony, 3,763,257.

Bradshaw, Christopher Patrick Cadman; and Egham, Peter Anthony, to BP Chemicals Limited. Dehydrogenation process. 3,763,257, Cl. 260-669.00r.

Brahtz, John F. Peel, to United States of America, Navy. Large floating ocean platform. 3,762,352, Cl. 114-.50d.

Brand, Jake L., Jr., to Texas Instruments, Incorporated. Dynamic position-actuated card reader. 3,763,355, Cl. 235-61.11e.

Brandt, Berndt: *See—*
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Braucksiek, Henry C.: *See—*
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Braun Aktiengesellschaft, mesne: *See—*
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Braznell, Andrew S. Combined postcard and mailer. 3,762,630, Cl. 229-92.800.

Breault, Richard David; Marcere, Alluren Leonard; and Jackson, Arthur Everett, to United Aircraft Corporation. Method of fabricating lightweight electrodes. 3,762,957, Cl. 136-121.000.

Bresser, Robert E.: *See—*
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Bridgestone Tire Company Limited: *See—*
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Yoshida, Tomonori; Takagi, Hirohiko; Harakon, Katsuyuki; and Matsui, Norio, 3,762,458.

Brill, William F., to Halcon International, Inc. Preparation of carbamates. 3,763,217, Cl. 260-471.00c.

Brill, William F., to Halcon International Inc. Preparation of amides. 3,763,234, Cl. 260-558.00p.

British Oxygen Company, Limited, The: *See—*
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Britton, William M.: *See—*
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Brown, Charles N.: *See—*
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Brown, Gaylord W.; and Howe, Charles E., to Koehring Company. Container seam locator and positioner for container printing. 3,762,315, Cl. 101-40.000.

Brown, R. J., and Associates: *See—*
Hinkle, George S., 3,762,358.

Bruce, Roger K., to Sterigard Company. Method for obtaining a predetermined and repeatable fill measure in a bag-in-can dispenser. 3,762,023, Cl. 29-400.000.

Brunetti, Holmo, to Ciba-Geigy Corporation. 4-Hydroxy-2,6-di-tert.alkylphenylcyanates. 3,763,206, Cl. 260-453.0ar.

Bruning, John Henry; and Herriott, Donald Richard, to Bell Telephone Laboratories, Incorporated. Lens assembly. 3,762,821, Cl. 356-152.000.

Brunner, Hans A., to Reynolds Metals Company. Pressure welding apparatus. 3,762,623, Cl. 228-3.000.

Bruno, Edward C., to Manetti, Mario. Latticed produce wrapper. 3,762,629, Cl. 229-87.00f.

Brunsteter, Frank H., to Invention Services Corporation. Camera holster. 3,762,616, Cl. 224-26.00r.

Brunsn, Herman A.; and Gould, Henry, to Mikhem Incorporated. Detergent builder composition. 3,763,231, Cl. 260-537.00r.

Bryant, Robert. Metered water faucet. 3,762,440, Cl. 137-551.000.

Bucciferro, Dominic: *See—*
Houbolt, Neal; and Bucciferro, Dominic, 3,763,487.

Buchanan, Alan David, to Monsanto Australia Limited. Production of para-substituted phenol/formaldehyde resins using heterogeneous multi-phase reaction medium. 3,763,104, Cl. 260-53.00r.

Buchanan, James B., to Du Pont de Nemours, E. I., and Company. 1-(Alkylenoiminocarbonyl)-N-(substituted carbamoyloxy)-thiolorimidates. 3,763,143, Cl. 260-239.00e.

Buchheit, Otto Karl, to Moeller & Neumann GmbH. Cross feeder device especially a cooling bed for rod material. 3,762,538, Cl. 198-219.000.

Bucklen, Victor L. Electrically positioned step for vehicles. 3,762,742, Cl. 280-160.000.

Buczynski, John A. Lure saver. 3,762,091, Cl. 43-17.200.

Buddemeyer, Bruce D.; and Moneymaker, John R., to Paniplus Company, The. Bakery products containing emulsification and improving agents. 3,762,932, Cl. 99-92.000.

Budwine, W. J.: *See—*
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Burckhardt, Manfred H.; Krohn, Hellmut; Grossner, Horst; and Florus, Hans-Jorg, to Daimler-Benz Aktiengesellschaft. Brake force control system for vehicles especially motor vehicles. 3,762,774, Cl. 303-21.0eb.

Burgess Micro Switch Company Limited: *See—*
Holmes, Raymond, 3,763,339.

Burk, Emmett H., Jr.; and Carlos, Donald D., to Atlantic Richfield Company. Method for the preparation of cyclic nitrile sulfites. 3,763,175, Cl. 260-301.000.

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Burmeister, Hans. Odor sealing method. 3,762,875, Cl. 21-60.50a.

Burney, Charles F.; and Pazemenas, Vytautas V., to GTE Sylvania Incorporated. Coaxial cable transducer. 3,763,482, Cl. 340-258.00r.

Burnhill, Michael S. Vaginal sponge. 3,762,414, Cl. 128-285.000.

Burns, Eugene A.: *See—*
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Burns, John Andrew; and Coucoulas, Alexander, to Western Electric Company, Incorporated. Method of forming circuit crossovers. 3,762,040, Cl. 29-593.000.

Burroughs Corporation: *See—*
Sharp, Richard S., 3,763,472.
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Burrows, Harold George; and Hepworth, Stephen John. Polyamides. 3,763,113, Cl. 260-78.0sc.

Burrows, Walter H., to American Charts Company. Method for making colored contoured replicas. 3,763,296, Cl. 264-71.000.

Burrus, Charles; and Boegli, Serge. Process of making cigarette filters, and apparatus. 3,762,281, Cl. 93-1.00c.

Burtelson, Frederick W., to Reliable Electric Company. Method of post-tensioning prestressed concrete. 3,762,027, Cl. 29-452.000.

Busch, John M., to FMC Corporation. Fluid operated friction clutch with dump valve. 3,762,520, Cl. 192-106.00f.

Bush Boake Allen Limited: *See—*
Sully, Bernard Thomas Dudley, 3,763,245.

Butre, Jean-Louis; and Pierrot, Francois, to Progil. Electrolytic process for obtaining chlorine in a pure state and alkali metal phosphates in concentrated solution and a cell for accomplishing this process. 3,763,005, Cl. 204-90.000.

BW-Weber Verwaltungsgesellschaft mit beschrankter Haftung: *See—*
Goebel, Hellmut; and Raiser, Ernst, 3,762,036.

Byers, William L. Inertia-tilt switch. 3,763,484, Cl. 340-262.000.

Cabut, Louis Antoine, to Ugine Kuhlmann. Anthraquinone dyestuffs. 3,763,192, Cl. 260-373.000.

Cage, John M., to Hewlett-Packard Company. Method and apparatus for the detection and recordation of high frequency sound in the cardiovascular system. 3,762,397, Cl. 128-2.05s.

Callerame, Mary Lou, to Chemical Generators, Inc. Process for producing chlorine dioxide. 3,763,006, Cl. 204-103.000.

Cam Gears Limited: *See—*
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Cameron, Gordon N. Hydraulically actuated spline arbor and chuck construction. 3,762,730, Cl. 279-4.000.

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Cantales, Paul. Disposable plastic leggings for dogs. 3,762,073, Cl. 36-2.50p.

Cantwell, Laurence W., to Portec, Inc. Rail anchor. 3,762,640, Cl. 238-327.000.

Cappel, Marie-Luise: *See—*
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Carabateas, Philip M., to Sterling Drug Inc. N-(3-Quinuclidenyl)aclanilides. 3,763,168, Cl. 260-293.530.

Carabateas, Philip M., to Sterling Drug Inc. 1,2,3,10,11,11a-Hexahydro-5H-pyrrolo[2,1-c] [1,4]benzodiazepines. 3,763,183, Cl. 260-326.300.

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Cargille, Donald R. Interweaved matrix updating coordinate converter. 3,763,358, Cl. 235-150.250.

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Carlson, Robert G.; Crawford, Joseph H.; Farmer, Edward R.; Murphy, Guy C.; and Salemme, Charles T., to General Electric Company. Foreign object damage protection for compressor blades and other structures and related methods. 3,762,835, Cl. 416-224.000.

Carmichael, Lee T.: *See—*
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Caron, Lionel, to Bell Telephone Laboratories, Incorporated. Magnetic domain logic control arrangement. 3,763,477, Cl. 340-174.0tf.

Carr, Louis Eugene: *See—*
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Carter, Ronald David, to Stanley Works, The. Stem cutting and retaining tool. 3,762,048, Cl. 30-124.000.

Cash, Kenneth W.; Dorr, Richard L.; and Gaebelein, Georg N., to International Business Machines Corporation. Method and apparatus for reading documents. 3,763,467, Cl. 340-146.3wd.

Cass, Richard, to TRW Inc. Boot seal constructions for rack and pinion gear. 3,762,740, Cl. 280-96.000.

Casselle Novelty Company, Inc.: *See—*
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Castellano, Sam. Auto body parts handler. 3,762,576, Cl. 214-1.00d.

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Chaisson, William P., to Package Machinery Company. Power assisted safety gate. 3,762,099, Cl. 49-360.000.

Chaitman, Jack L., to Howard Displays, Inc. Carpet and like fabric sample carrier. 3,762,985, Cl. 161-67.000.

Chambers, Charles W., Jr., to Lorain Products Corporation. Impedance responsive voltage booster circuit for telephone systems. 3,763,319, Cl. 179-16.00f.

Chambers, Charles W., Jr., to Lorain Products Corporation. Voltage booster circuit having test-through characteristics. 3,763,320, Cl. 179-16.00f.

Champel, Gerard; and Ody, Francois, to Societe anonyme dite: Etablissements Joseph Lagarde. Method for vapor treating textile material. 3,762,868, Cl. 8-149.500.

Chance, Leon H.; and Moreau, Jerry P., to United States of America, Agriculture. Perfluoroalkyl phosphonates. 3,763,282, Cl. 260-932.000.

Chand, Ramesh, to Dynasciences Corporation. Method and apparatus for measuring nitrogen oxides and sulfur dioxide concentrations. 3,763,025, Cl. 204-1.00t.

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Chapman, Charles C., to Phillips Petroleum Company. Condensing fractionator sidestream vapor as reboiler heat source. 3,763,022, Cl. 203-25.000.

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Chapman, Wood, & Griswold, Ltd.: *See—*
Tisdel, Lawrence C.; and Scott, Harry B., 3,762,880.
Chappel, Gilford A., to Esso Research and Engineering Company. Process for hydrogenating unsaturated hydrocarbons by use of small amounts of oxygen. 3,763,268, Cl. 260-683.900.
Charamel, Pierre, to Merlin Gerin, Societe Anonyme. Polyphase current collecting device for a vehicle moving along a trackway. 3,763,336, Cl. 191-49.000.
Charle, Roger; Kalopissis, Gregoire; Viout, Andrio; Aretos, Constantin; and Gascon, Jean, to Societe anonyme dite: L'Oreal. Wool or hair treated with methacrylic anhydride or itaconic anhydride copolymerized with maleic anhydride and after treated with meraptoethylamine and propylene diamine or butyl amine. 3,762,863, Cl. 8-127.510.
Charybdis, Inc.: *See—*
Hollister, Donald D., 3,763,392.
Chemical Generators, Inc.: *See—*
Callerame, Mary Lou, 3,763,006.
Chen, Nai-Keung, to Sperry Rand Corporation. Hair roller means. 3,762,424, Cl. 132-33.00r.
Chesser, Billy G.; and Allen, Floyd Lee, to Milchem Incorporated. Process for the prevention of balling. 3,762,485, Cl. 175-65.000.
Chetter, John: *See—*
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Chevron Research Company: *See—*
Kohn, Gostave K.; and Singer, Malcolm S., 3,763,176.
Chez, Ephriam. Metal pallet and leg construction therefor. 3,762,344, Cl. 108-58.000.
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Mc Cabe, John S., 3,762,548.
Chicago Rawhide Manufacturing Company: *See—*
Jornhagen, Lennart B., 3,762,726.
Chiddix, Max Eugene; and Tracy, David James, to GAF Corporation. Phosphorus containing derivatives of ω-(3,5-dialkyl-4-hydroxyphenyl) alkanols. 3,763,287, Cl. 260-941.000.
Chillson, Charles W., to Curtiss-Wright Corporation. Landing gear wheel drive system for aircraft. 3,762,670, Cl. 244-50.000.
Chivers, Thomas E., to General Mills, Inc. Process and apparatus for making candy floss. 3,762,846, Cl. 425-7.000.
Cho, Yo-Sung; and Kelcourse, Francis Charles, to Bell Telephone Laboratories, Incorporated. Apparatus for equalizing a transmission system. 3,763,359, Cl. 235-151.000.
Choay S.A.: *See—*
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Chow, Silver H.: *See—*
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Christensen, Leland C., 1/2 to Christensen, Robert. Apparatus and method for producing a silk screen matrix. 3,762,636, Cl. 234-2.000.
Christensen, Robert: *See—*
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Christenssone Maskiner & Patenter Aktiebolag: *See—*
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Christina, Paul J. Container carrying carts. 3,762,738, Cl. 280-47.190.
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Chu, Nan Shieh; and Wartman, Lloyd Henry, to Union Carbide Corporation. Process for the preparation of interpolymers of poly(ethylene oxide). 3,763,277, Cl. 260-874.000.
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Citrin, Paul Stuart, to Sieburg Industries, Incorporated. Indexing device for drafting instrument. 3,762,055, Cl. 33-81.000.
Civardi, Frank P.; and Lattarulo, Charles J., to Immont Corporation. Process for densifying a microporous elastomeric polyurethane sheet material. 3,763,301, Cl. 264-321.000.
Claes, Karel. Injection moulding machines, particularly to the injection head thereof and to the injection moulds used therewith. 3,762,849, Cl. 425-190.000.
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Clarke, ARthur F., Jr. Multi-speed digital to synchro converters. 3,763,414, Cl. 318-605.000.
Clarke, Gail H., Jr.; and Barnowski, Henry G., Jr., to Olin Corporation. Composition and method for stripping polyvinyl butyral primed coatings. 3,762,953, Cl. 134-38.000.
Clash, David Guernsey; and Kozak, Theodore Frederick, to Union Carbide Corporation. Method and apparatus for piercing thin sheet material. 3,762,255, Cl. 83-309.000.
Claxton, William E.; and Holden, Harold C., to Firestone Tire & Rubber Company, The. Resistance setting apparatus. 3,763,354, Cl. 235-61.11a.
Clay, Gilbert N. Flange leveling device. 3,762,068, Cl. 33-180.00r.
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Clock, Gerald E.; and Brown, Charles N., to Dow Chemical Company, The. Interlayer and laminated product. 3,762,988, Cl. 161-183.000.
Clouston, John L. Two-part automotive tire chain. 3,762,456, Cl. 151-213.00a.
Cochran, Troy Lee; and Kirkpatrick, Melvin D., to Union Carbide Corporation, mesne. Apparatus for making seed tape. 3,762,127, Cl. 53-177.000.
Coffman, Benjamin F.; and Coffman, Muriel F. Teaching aid. 3,762,071, Cl. 35-35.00f.
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Scow, Kenneth B.; and Tuttle, James W., 3,763,031.
Coggins, Burton Frank, Jr. Method and apparatus for making snow. 3,762,176, Cl. 62-74.000.
Cohen, Abraham D., to Esso Research and Engineering Company. Two-step dehydrogenation process. 3,763,258, Cl. 260-669.00r.
Cohen, Arthur Merrill. Bus shelters. 3,762,109, Cl. 52-11.000.
Cohin, Noal; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Aminospirothiazines and processes therefor. 3,763,155, Cl. 260-243.00r.
Cole, Clyde C. Handling beam for heavy elongate objects. 3,762,756, Cl. 294-81.00r.
Coleman, Charles H., Jr.; and MacKenzie, Robert P., to Ampex Corporation. System for correcting time-base errors in a repetitive signal. 3,763,317, Cl. 178-69.5tv.
Coletta, Edward A. Fluid system. 3,762,607, Cl. 222-185.000.
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Collins, Mary M.; and Collins, James E. Boot rack. 3,762,573, Cl. 211-34.000.
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Combustion Engineering Inc.: *See—*
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Confer, Dale E.; Creed, John W., Jr.; and Elliott, Harold V., to General Motors Corporation. Electrically coupled steering column. 3,763,455, Cl. 339-3.00s.
Conibear, Frank. Trigger mechanism for animal trap. 3,762,094, Cl. 43-92.000.
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Cook, Charles Calvin; and Haynsworth, Erwin Mathew, to American Cyanamid Company. Process of removing water from slimes. 3,763,041, Cl. 210-42.000.
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Davis, Benjamin; Pearce, Derek Roger; Cook, Martin Christopher; Weir, Niall Galbraith; Newall, Christopher Earle; Ayres, Barry Edward; Gregory, Gordon Ian; and Phillipps, Gordon Hanley, 3,763,195.
Cooper, Julius, to Ideal Toy Corporation. Portable shuffleboard game. 3,762,711, Cl. 273-126.00r.
Cooper, Robert T.; and Soule, Harrison O., to Dresser Industries, Inc. Drill rod handling apparatus for raise drills. 3,762,578, Cl. 214-1.00p.
Cordes, Linus F., to General Electric Company. Method of making resistor thin films by reactive sputtering from a composite source. 3,763,026, Cl. 204-192.000.
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Correia, Yves; and Clair, Rene, to Produits Chimiques Pechiney-Saint-Gobain. Process of inhibiting decomposition of 1,1,1,2-tetrachloroethane. 3,763,017, Cl. 203-6.000.
Corso, Vincent A.; and Dattilo, Donald J., to Motorola, Inc. Cartridge locking mechanism. 3,762,721, Cl. 274-4.00b.
Corson, Floyd L.: *See—*
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Court, Wilbur M., to Rexham Corporation, mesne. Article feeder for a packaging machine. 3,762,126, Cl. 53-55.000.
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Craig, Theodore W.; Henika, Richard G.; and Hoyer, William H., to Patent Technology, Inc., mesne. Macaroni process. 3,762,931, Cl. 99-85.000.
Crampton, Lester M. Thermolytic sewage system. 3,762,549, Cl. 210-123.000.
Crawford, Allan H., to Mohasco Industries, Inc. Textile printing method. 3,762,867, Cl. 8-149.100.
Crawford, Joseph H.: *See—*
Carlson, Robert G.; Crawford, Joseph H.; Farmer, Edward R.; Murphy, Guy C.; and Salemme, Charles T., 3,762,835.
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Cromwell, Gordon W.; and Borland, Walter G., to Elgin Electronics Inc. Thyristor gating and phase shift circuit. 3,763,381, Cl. 307-255.000.
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Crowell, Douglas H.; Tadcliffe, Milton R.; and Tabroff, William, to USM Corporation. Conductive cutting pad. 3,762,262, Cl. 83-658.000.
Cseri, Zoltan, to Stanray Corporation. Uncoupling rod assembly. 3,762,575, Cl. 213-166.000.
Culley, John Ernest. Golf putting practice device. 3,762,718, Cl. 273-176.00h.
Culp, Charles R.; Eyman, Douglas R.; and Lewicki, Walter J., Jr., to Armstrong Cork Company. Brush-out apparatus. 3,762,101, Cl. 51-78.000.
Culver, Clyde C., to General Motors Corporation. Joint for a human neck simulator. 3,762,069, Cl. 35-17.000.
Culver, Clyde C., to General Motors Corporation. Spinal column simulator. 3,762,070, Cl. 35-17.000.
Cumbo, Charles Carmen; and Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Flame retardant antimony compounds. 3,763,202, Cl. 260-446.000.
Cummings, William E., d/b/a Jeffersontown Specialty Company: *See—*
Meyer, Herbert S., Jr., 3,762,089.
Cummins, Phil F. Remote controlled hazard-fighting vehicle. 3,762,478, Cl. 169-24.000.
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Cunningham, Robert A., to Hughes Tool Company. Connection members with high torque carrying capacity. 3,762,745, Cl. 285-92.000.
Cunningham, William K.; and Knight, Donald B., to Dow Chemical Company, The. Solvent bleaching process. 3,762,862, Cl. 8-111.000.
Curci, Alfred. High-speed helicopter. 3,762,669, Cl. 244-17.230.
Curgan, Mark N., to Patrick, C. H., & Co., Inc. N-hydroxymethylated dialkyl phosphonoalkyl carbamates. 3,763,283, Cl. 260-938.000.
Curran, John R., to Foxboro Company, The. Stem guided valve with cage assembly. 3,762,685, Cl. 251-362.000.
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Cutting, Arch E.: *See—*
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Cyba, Henryk A., to Universal Oil Products Company. Flame retardant compositions of matter. 3,763,090, Cl. 260-45.80n.
Daddis, Arthur W., to United Billiards, Incorporated. Coin actuated device having a solenoid leaf release microswitch. 3,762,527, Cl. 194-9.00r.
Dagani, Michael J., to Ethyl Corporation. Production of organic halides and tertiary phosphine sulfides. 3,763,241, Cl. 260-606.50p.
Dahlman, Frederick A.; and Mras, Raymond J., to Corning Glass Works. Pressurized fluid ram acceleration system. 3,762,906, Cl. 65-160.000.
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Dal Pont, Giorgio. Preformed universal orthodontic arch. 3,762,050, Cl. 32-14.00a.

Dalhaus, Robert R., to Max-Dal Aero Applicators Manufacturers, Inc. Spray apparatus for spraying herbicides, insecticides and the like. 3,762,649, Cl. 239-391.000.

Dall'Asta, Leone: *See—*
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D'Amato, Salvatore F.: *See—*
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D'Amico, Paul. Line holder-cutter hand tool, selective guage and shell-shocking means, in combination. 3,761,976, Cl. 7-14.250.

Dammon, James R., to Fairfield Manufacturing Company, Inc. Wheel drive unit. 3,762,488, Cl. 180-66.00f.

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Daniels, Alma U., to Du Pont de Nemours, E. I., and Company. Titanium carbide-nickel composition process. 3,762,919, Cl. 75-204.000.

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Daughenbaugh, Raymond S. Self-inflating life raft. 3,761,979, Cl. 9-11.00a.

Dave, Sharad M. Variable internal combustion engine valve operating system. 3,762,381, Cl. 123-90.150.

Davie, William R.; and Green, Lonzo F., to United States Steel Corporation. Phosphorus-borate glass frits as plant micro nutrient carriers. 3,762,909, Cl. 71-1.000.

Davies, Robert William; Veness, Maxwell Francis; and Thornton, Leonard, to Molins Limited. Packing machines. 3,762,130, Cl. 53-183.000.

Davis, Benjamin; Pearce, Derek Roger; Cook, Martin Christopher; Weir, Niall Galbraith; Newall, Christopher Earle; Ayres, Barry Edward; Gregory, Gordon Ian; and Phillipps, Gordon Hanley, to Glaxo Laboratories, Limited. Novel 21-acyloxy-3α-hydroxy-5-pregnane-11, 20-diones. 3,763,195, Cl. 260-397.450.

Davis, Lawrence P.; Harrison, John E.; and Tribken, Everett R., to Sperry Rand Corporation. Control moment gyroscope with integral torque control. 3,762,226, Cl. 74-5.400.

Davis, Mike, to Dresser Industries, Inc. Stuck point indicating device with linear sensing means. 3,762,218, Cl. 73-151.000.

Davis, Pauls; and Vogt, Herwart C., to BASF Wyandotte Corporation. Two-phase slurry process for the chloronitrosylation of polymers. 3,763,134, Cl. 260-93.700.

Davis, Steven S., to Envirotech Corporation. Belt guide and tensioning device for horizontal filters. 3,762,561, Cl. 210-401.000.

Dawids, Steen Gamwell: *See—*
Boe, Christian Throkild; and Dawids, Steen Gamwell, 3,762,555.

Dawson, James A., to McDonnell Douglas Corporation. Check gauge for swaged fitting and tube connections. 3,762,059, Cl. 33-174.00g.

Day, Edward G.; and Ranft, Ernst L., to General Motors Corporation. Exhaust gas recirculation valve. 3,762,384, Cl. 123-119.00a.

Day, Lawrence, to Spitfire Tool & Machine Co., Inc. Device for testing the flatness of the surface of a lapping plate of a lapping machine. 3,762,053, Cl. 33-1.0bb.

Dayco Corporation: *See—*
Herndon, Leon; and Pearson, Charles S., 3,762,209.

DBT Manufacturing, Ltd.: *See—*
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De Berardinis, Albert J., to ICI America Inc. Process for producing mannitol. 3,763,246, Cl. 260-635.00c.

De Boer, Franciscus Jacobus: *See—*
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De Coninck, David D. Quoit having hooked end portions and an opening in the center hub. 3,762,710, Cl. 273-106.00c.

De George, Michael. Traction splint assembly. 3,762,405, Cl. 128-84.00c.

de Jonge, Martinus Catrinus. Grating comprising a plurality of grating parts. 3,762,124, Cl. 52-666.000.

De Lorenzo, Joseph D.: *See—*
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De Marco, Robert D.; and Tucker, Harold A., to Goodrich, B. F., Company, The. Acrylic ester vinylbenzyl chloride elastomers. 3,763,119, Cl. 260-80.760.

De Rome, Eugene J.; and Hengst, Carl J. Post pulling apparatus. 3,762,687, Cl. 254-30.000.

De Vries, James H., to Sarns, Inc. Peristaltic pump construction. 3,762,836, Cl. 417-238.000.

De Vrieze, Jerry D.: *See—*
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De Witt, Robert G.: *See—*
Nelson, Maynard E.; and De Witt, Robert G., 3,762,090.

DeBoo, Robert Victor; and Heard, Charles Bean, Jr., to Western Electric Company, Incorporated. Methods of and apparatus for advancing and working thermoplastic materials. 3,762,693, Cl. 259-191.000.

DeCat, Arthur Henri: *See—*
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Deeg, Emil W.; and Graf, Robert E., to American Optical Corporation. Low threshold yttrium silicate laser glass with high damage threshold. 3,763,052, Cl. 252-301.40f.

Deerhake, William James, to International Business Machines Corporation. Bar code scanner. 3,763,351, Cl. 235-61.11e.

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Del Pico, Joseph, to Abcor, Inc. Supported semipermeable membranes and process for preparing same. 3,762,566, Cl. 210-490.000.

Del Piero, Elio; and Wautriche, Willy, to Solvay & Cie. Method for trimming the botton of hollow synthetic resin articles. 3,763,297, Cl. 264-98.000.

Del Rio, Eddy Humberto; and Pothier, Donald Forman, to RCA Corporation. Self-cleaning read head. 3,763,352, Cl. 235-61.11e.

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Derossi, Piero. Device enabling to perform the rewinding of the film in a sound motion picture projector. 3,762,618, Cl. 226-76.000.

Deshores, Robert E., to Lock Top Corporation. Cover for open end vehicles. 3,762,763, Cl. 296-137.00b.

Desloge, George B., to Watlow Electric Manufacturing Company. Radiant heater with improved radiating bars and mounting means therefor. 3,763,349, Cl. 219-536.000.

Detrick, Dale W.; and Dimonte, Angelo M., to Thrust, Incorporated. Open loop, linear, incremental positioning device. 3,763,412, Cl. 318-135.000.

Deuter, Thomas F.; and Shafer, Dean E., to General Electric Company. Apparatus for making a molded electrical structure. 3,762,847, Cl. 425-125.000.

Deuter, Thomas F., to General Electric Company. Pressure molded articles and moldable composition. 3,763,080, Cl. 260-37.0sb.

Deutsch, Ralph; and Ashby, Robert M., to North American Rockwell Corporation. Apparatus for storing and reading out periodic waveforms. 3,763,364, Cl. 235-152.000.

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Di Lorenzo, James Vincent, to Bell Telephone Laboratories, Incorporated. Technique for the fabrication of a millimeter wave beam lead Schottky barrier device. 3,762,945, Cl. 117-215.000.

Di Salvo, Salvatore; and Guglielmino, Francesco, to Flat Societa per Azioni. Lampholders. 3,763,456, Cl. 339-17.00d.

Di Santo, Bartel J. Grass guard for sprinkler heads. 3,762,642, Cl. 239-201.000.

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Baker, Edward A., Jr.; and Fabb, Rowland A., 3,762,335.

Faber, Kurt Heinrich Albert Erich, to Sandvik Aktiebolag. Drill with guide device. 3,762,828, Cl. 408-83.000.

Factor, Arnold, to General Electric Company. Color-stabilized polycarbonate composition containing a cadmium or cerium salt of an alkanoic acid, an alkanoic acid and an organic phosphite. 3,763,063, Cl. 260-18.0tn.

Fahrni, Peter, head of Fahrni Institute, Ltd.: *See—*
Wirz, Walter, 3,762,974.

Fairfield Manufacturing Company, Inc.: *See—*
Dammon, James R., 3,762,488.

Fairs, Robert Roy, to Procter & Gamble Company, The. Detergent compositions. 3,763,047, Cl. 252-99.000.

Falconi, Giovanni: *See—*
Gardi, Rinaldo; Vitali, Romano; and Falconi, Giovanni, 3,763,196.

Falk, Donald G.; and Konermann, Gerhard I. Framing clamp. 3,762,696, Cl. 269-108.000.

Falkehag, Sten I.; Bills, Alan M.; and Hintz, Harold L., to Westvaco Corporation. Digestion of lignocellulosic material with cyanide and bisulfate ions at a pH below 7. 3,762,990, Cl. 162-83.000.

Falkehag, Sten I., to Westavaco Corporation. Modified lignin surfactants. 3,763,139, Cl. 260-124.00r.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Reischl, Artur; Dieterich, Dieter; and Witt, Harro, 3,763,054.

Farmer, Edward R.: *See—*
Carlson, Robert G.; Crawford, Joseph H.; Farmer, Edward R.; Murphy, Guy C.; and Salemme, Charles T., 3,762,835.

Farr, Roderick Peter, to Girling Limited. Automatic adjusters. 3,762,513, Cl. 188-196.00d.

Farrar, Ralph C., to Phillips Petroleum Company. Random copolymerization of conjugated dienes with monovinyl aromatic monomers. 3,763,126, Cl. 260-83.700.

Fastener Corporation: *See—*
Geist, Bernard W., 3,762,620.

Fedders Corporation: *See—*
Beare, Robert B.; and Jack, Billy Gene, 3,762,608.

Federal-Mogul Corporation: *See—*
Dunn, William M., 3,762,881.

Federal's, Inc.: *See—*
Stuart, Hershel L., 3,762,459.

Fedotowsky, Andre; and Lehovec, Kurt, to Inventors & Investors, Inc. Zone plate optics monolithically integrated with photoelectric elements. 3,763,372, Cl. 250-211.00j.

Feldman, Lewis. Single passenger flexible rotor aircraft. 3,762,668, Cl. 244-17.110.

Feldman, Mark Abramovich: *See—*
Alexandrov, Adolf Moritsovich; Suladze, Ippolit Davidovich; Kantor, Ilia Solomonovich; Aglitsky, Vladimir Efimovich; Akhniashvili, Avtandil Semenovich; Tsimbler, Jury Abramovich; Lachinov, Alexandr Alexandrovich; Topolyansky, Jury Arnoldovich; Ivanov, Genndy Nikitich; and Feldman, Mark Abramovich, 3,762,665.

Fengler, Harald: *See—*
Hujer, Friedrich; Fengler, Harald; and Wiesbeck, Franz, 3,762,252.

Fernseh G.m.b.H.: *See—*
Hescher, Manfred, 3,763,327.

Ferranti Limited: *See—*
Jackson, Sydney; and Titterington, Joseph Bell, 3,762,029.
Jenkins, Raymond Vaughan, 3,763,399.

Fest, Christa; Hammann, Ingeborg; and Unterstenhofer, Gunter, to Bayer Aktiengesellschaft. 5-Methyl-pyrazol-3-yl-thionophosphonic acid esters. 3,763,181, Cl. 260-310.00r.

Feuer, Robert; and Ball, Donald A., to Conrac Corporation. Digital pressure transducer. 3,762,223, Cl. 73-398.00c.

Fichtel & Sachs AG: *See—*
Dotter, Karl-Heinz, 3,762,521.

Field, Milton M.: *See—*
Belknap, Donald J., 3,762,900.
Belknap, Donald J., 3,763,390.

Fields, Jimmie, 30% to Lee, Raymond, Organization, Inc., The. Board game. 3,762,713, Cl. 273-130.00r.

Fijal, Walter R., to BASF Wyandotte Corporation. Polyurethane products produced from a sucrose-ethylene diamine co-initiated polyether polyol. 3,763,111, Cl. 260-77.5aq.

Fike, Lester L., Jr.: *See—*
Fike, Lester L., Sr.; and Fike, Lester L., Jr., 3,762,479.

Fike, Lester L., Sr.; and Fike, Lester L., Jr., to Fike Metal Products Corporation. Remotely actuatable portable fire suppression apparatus. 3,762,479, Cl. 169-28.000.

Fike Metal Products Corporation: *See—*
Fike, Lester L., Sr.; and Fike, Lester L., Jr., 3,762,479.

Fikse, Tyman H.; Scheumann, Richard E.; and Johnson, Chester H., to Constructors-Pamco and Constructors Pacific Company. Protective inching shield for pipe-laying. 3,762,174, Cl. 61-85.000.

Firestone Tire & Rubber Company, The: *See—*
Claxton, William E.; and Holden, Harold C., 3,763,354.

Fitzgerald, J. Vincent; Matusik, Frank J.; and Oppliger, Hans R., to National Metal and Refining Company, Inc. High precision wide dynamic range viscous loss measuring apparatus. 3,762,429, Cl. 137-92.000.

Fitzhugh, David. Irrigation apparatus and methods. 3,762,170, Cl. 61-13.000.

Fitzpatrick, Arthur M., Jr. Safety razor with roller mounted strip blade. 3,762,045, Cl. 30-40.100.

Flannigan, William Tait; and Gibbon, Robert Muir, to Imperial Chemical Industries, Limited. Amino substituted organo tin carboxylates and the preparation thereof. 3,763,198, Cl. 260-429.700.

Flat Societa per Azioni: *See—*
Di Salvo, Salvatore; and Guglielmino, Francesco, 3,763,456.

Fleck, Lawrence L.; and Hickling, Robert, to General Motors Corporation. Occupant restraint cushion. 3,762,741, Cl. 280-150.0ab.

Fleischer, Michael: *See—*
Strube, Wolf-Dietrich; and Fleischer, Michael, 3,762,368.

Fleissner, Gerold: *See—*
Fleissner, Heinz; and Fleissner, Gerold, 3,762,187.

Fleissner, Heinz; and Fleissner, Gerold, to Vepa AG. Apparatus for the steam treatment of materials. 3,762,187, Cl. 68-5.00e.

Fleming, Gordon R.: *See—*
Ovshinsky, Stanford R.; and Fleming, Gordon R., 3,763,468.

Flohr, Peter, to Siemens Aktiengesellschaft. Electric holding magnet serving as tripping device for ground leakage circuit breakers. 3,763,450, Cl. 335-174.000.

Florus, Hans-Jorg: *See—*
Burckhardt, Manfred H.; Krohn, Hellmut; Grossner, Horst; and Florus, Hans-Jorg, 3,762,774.

Flowers, Leonard B.: *See—*
Okuniewski, Vincent F.; and Flowers, Leonard B., 3,762,562.
Okuniewski, Vincent F.; and Flowers, Leonard B., 3,762,565.

Fluckiger, Paul. Control device on machine tools. 3,762,104, Cl. 51-165.00r.

FMC Corporation: *See—*
Block, Donald P., 3,762,140.
Busch, John M., 3,762,520.
So, Stephen W., 3,763,299.

Fogelsong, Robert L.: *See—*
Wright, Colin S.; Fogelsong, Robert L.; Johnson, Jerold W.; and Jouhal, Teja S., 3,762,309.

Food Technology Inc.: *See—*
Newcomer, J. L., 3,762,394.

Foote, Chauncey P., Jr.: *See—*
Gazzola, Valdo; D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., 3,762,319.

Forbes, Walter Warrick Wright: *See—*
Moss, Edward; and Forbes, Walter Warrick Wright, 3,762,416.

Ford Motor Company: *See—*
James, Trevor N.; and Janosi, Francis L., 3,762,509.

Forgash, Paul: *See—*
Morley, John D.; and Forgash, Paul, 3,762,212.

Formaini, Robert I., to Allied Chemical Corporation. Polyesters from tris(2-hydroxyalkyl) isocyanurate homopolymers. 3,763,269, Cl. 260-75.0ua.

Forrester, Henry H., Jr. Progress meter. 3,762,158, Cl. 58-152.00e.

Forster, Friedrich M. O. Magnetic particle flow selector including shield means to protect previously tested surfaces. 3,763,423, Cl. 324-38.000.

Forster, Karl-Heinz: *See—*
Johne, Albrecht; Forster, Karl-Heinz; and Schanze, Klaus, 3,762,320.

Foseco International, Limited: *See—*
McCray, Walter A., 3,762,033.

Foulletier, Louis; and Lalu, Jean-Pierre, to Produits Chimiques Ugine. Perfluoroaliphatic substituted amines. 3,763,225, Cl. 260-486.00h.

Fournier, Gerald R.; and Baker, Charles L., to Texas Instruments, Incorporated. Light beam deflection. 3,762,791, Cl. 350-6.000.

Fowlie, Wallace R.; and Yoon, Moo S., to Dick, A. B., Company. Document feeder for electrostatic copier. 3,762,813, Cl. 355-14.000.

Fox, John H., Jr.: *See—*
Wilson, Calvin L.; and Fox, John H., Jr., 3,762,431.

Foxboro Company, The: *See—*
Curran, John R., 3,762,685.

Franck, Donald L., to General Motors Corporation. Valve. 3,762,682, Cl. 251-124.000.

Franck, Max E.; and Heisler, Harry F.; deceased (Converse, Juliette R.; executrix), to Heisler Manufacturing Company. Centrifugal pump. 3,762,832, Cl. 415-98.000.

Frank, Mathilda C. Drainage bag holder shield and method. 3,762,412, Cl. 128-283.000.

Frankel, Stanley P.; and Monroe, Francis Robert, to Tallymate Corporation. Stored program computer with plural shift register storage. 3,763,475, Cl. 340-172.500.

Frankiw, Walter: *See—*
Anthony, Russell W.; and Frankiw, Walter, 3,762,270.

Frantz, David Louis, to Du Pont de Nemours, E. I., and Company. Polymeric web shredding. 3,762,256, Cl. 83-356.300.

Franz, Robert W.; and Zielnicki, John J., to Cam-Fram Tool Co., Inc. End transformer and enclosure. 3,762,205, Cl. 72-339.000.

Frazier, John P. Vacuum cleaner. 3,761,997, Cl. 15-422.000.

Freche, John C.: *See—*
Dreshfield, Robert L.; Sandrock, Gary D.; and Freche, John C., 3,762,918.

Fredman, Harry. Adjustable bed carriage with adapter unit. 3,761,970, Cl. 5-181.000.

Free-Flow Packaging Corporation: *See—*
Fuss, Gunter G., 3,762,772.

Freeman, Richard Don, to Bell Telephone Laboratories, Incorporated. Program activated computer diagnostic system. 3,763,474, Cl. 340-172.500.

Freitag, Herbert, to Stabilus Industries- und Handelsgesellschaft mbH. Support column of adjustable length. 3,762,514, Cl. 188-300.000.

Freiter, Edward R., to Dow Chemical Company, The. Substituted halophenoxyamidine acetals. 3,763,237, Cl. 260-564.00r.

Fresard, Marcel; Plomb, Francis; and Baruffa, Olindo, to Mefina S.A. Sewing machine. 3,762,349, Cl. 112-158.00b.

Fresco Industries, Inc.: *See—*
Escobedo, Francisco, 3,762,272.

Freter, Kurt: *See—*
Merz, Herbert; Freter, Kurt; and Zeile, Karl, 3,763,164.

Frezza, Robert, to Samcoe Holding Corporation, mesne. Apparatus for distending and heat-treating tubular knitted fabric. 3,762,003, Cl. 26-56.000.

Frick, Hansjorg: *See—*
Baumann, Erwin; Beham, Gerhard; and Frick, Hansjorg, 3,762,540.

Fricke, Horst: *See—*
Von der Crone, Gerhard; and Fricke, Horst, 3,762,911.

Friedel, Murray, to Visual Graphics Corporation. Camera with rotatable vacuum exposure plate and Ben Day screen. 3,762,815, Cl. 355-73.000.

Friedman, Hyman: *See—*
Friedman, Hyman; and Michael, Melvin C. (said Michael assor. to said), 3,762,311.

Friedman, Hyman; and Michael, Melvin C., said Michael assor. to said Friedman, Hyman. Tamper for baler. 3,762,311, Cl. 100-49.000.

Friedman, Ronald L.: *See—*
Lewis, Roger N.; and Friedman, Ronald L., 3,763,128.

Frisbey, Devern C., to Western Wood Mfg. Co. Water ski binding. 3,761,981, Cl. 9-310.0aa.

Frisch, Eldon E.: *See—*
Holmes, George W.; and Frisch, Eldon E., 3,762,978.

Frohberger, Paul-Ernst: *See—*
Widdig, Arno; Grewe, Ferdinand; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,763,219.

Frohlich, Alfons; Cappel, Marie-Luise; and Stubiger, Ernst, to Opti-Holding AG. Slide-fastener stringer with knit tape. 3,762,002, Cl. 24-205.10c.

From, Joseph, to S.A. Leroli. Apparatus for the individual and automatic monitoring of replies given under examination. 3,762,072, Cl. 35-48.00r.

Fryd, Michael, to Du Pont de Nemours, E. I., and Company. Polyurethanes based on mixed aromatic-aliphatic polyesters. 3,763,079, Cl. 260-37.00n.

Fuji Denki Kagaku Kabushiki Kaisha: *See—*
Kobayashi, Seihin; Torii, Michihiro; and Oshima, Katsuyuki, 3,763,003.

Fuji Photo Film Co., Ltd.: *See—*
Matsumoto, Seiji, 3,762,811.
Miyata, Tomiaki; and Sakamoto, Kiichiro, 3,763,308.
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Fujii, Tadashiro: *See—*
Abe, Jinnosuke; Watanabe, Tetsuo; Yamaguchi, Tsutomo; Fujii, Tadashiro; Matsumoto, Kunio; Shibuya, Yuzo; and Hanamitsu, Kazumi, 3,763,000.

Fujisawa, Funio: *See—*
Takenoshita, Mitsuaki; and Fujisawa, Funio, 3,762,165.

Fujiwara, Shohei: *See—*
Kauo, Gota; Iizuka, Mutsuo; Fujiwara, Shohei; Hasegawa, Hiromasa; and Sawaki, Tsukasa, 3,763,408.

Fukuda, Takuji: *See—*
Kikuchi, Michitsugu; Kasahara, Akishige; and Fukuda, Takuji, 3,762,145.

Fuller, William J.: *See—*
Lloyd, William E.; Fuller, William J.; Fuller, William S.; and Hazen, William R., 3,762,411.

Fuller, William S.: *See—*
Lloyd, William E.; Fuller, William J.; Fuller, William S.; and Hazen, William R., 3,762,411.

Fulwiler, Stanley S., to Tapecon, Inc. Auxiliary device for a cassette tape recorder including a plug conformed as a cassette for enterconnection. 3,763,330, Cl. 179-100.20z.

Funsch, Owen B.; and Rye, Grover W., to Goodyear Tire & Rubber Company, The. Apparatus for processing tire cord fabric. 3,762,364, Cl. 118-33.000.

Furlong, Louis E.: *See—*
Zimmerman, Abraham A.; Furlong, Louis E.; and Shannon, Hugh F., 3,762,891.

Furuhashi, Michio: *See—*
Sagishima, Takayuki; Furuhashi, Michio; and Sasaki, Reiichi, 3,763,310.

Furuya, Akira: *See—*
Nakayama, Kiyoshi; Furuya, Akira; and Kato, Fumio, 3,763,008.

Furuya, Kazuya: *See—*
Morii, Eiji; Furuya, Kazuya; Sato, Shui; and Wakabayashi, Yasuo, 3,762,924.

Fuss, Gunter G., to Free-Flow Packaging Corporation. Air conveyance system and control. 3,762,772, Cl. 302-28.000.

Gabbrielli, Guglielmo. Loading and unloading equipment of tiles or the like in baking plants. 3,762,581, Cl. 214-16.40r.

Gabrail, Sami I., to General Electric Company. Method of etch subdividing semiconductor wafers. 3,762,973, Cl. 156-17.000.

Gaebelein, Georg N.: *See—*
Cash, Kenneth W.; Dorr, Richard L.; and Gaebelein, Georg N., 3,763,467.

GAF Corporation: *See—*
Chiddix, Max Eugene; and Tracy, David James, 3,763,287.

Gall, James W., to Phillips Petroleum Company. Subterranean formation permeability correction. 3,762,476, Cl. 166-294.000.

Gall, Martin, to Upjohn Company, The. 2-Imidazol-1-yl benzophenones. 3,763,179, Cl. 260-309.000.

Gallo, Joseph Sebato. Carrier with retaining rollers. 3,762,097, Cl. 47-34.110.

Gallotello, Peter Edward: *See—*
Schur, Paul Elliot; Gallotello, Peter Edward; Keuler, Joseph Frederick; and Carter, James Milton, 3,762,184.

Galton, Robert M.: *See—*
Blesch, Robert; and Galton, Robert M., 3,763,434.

Ganiaris, Neophytos. Multi-stage concentration of coffee. 3,762,177, Cl. 62-123.000.

Gannon, Joseph A.; and Deck, Richard L., to Shell Oil Company. Clay-thickened grease containing synergistic additive combination. 3,763,042, Cl. 252-21.000.

Garbalizer Corporation of America: *See—*
Brewer, John C., 3,762,655.

Garcia, Hernando Javier; and Peek, Benjamin Roger, to Integrated Systems Technology, Inc., mesne. Digital-to-tone converter utilizing a relaxation oscillator. 3,763,322, Cl. 179-41.00a.

Garcia, Hernando Javier; and Peek, Benjamin Roger, to Integrated Systems Technology, Inc., mesne. Tone detector system. 3,763,324, Cl. 179-84.0vf.

Garcia, Hernando Javier; and Peek, Benjamin Roger, to Integrated Systems Technology, Inc. Temperature compensated signal generation circuit employing a single temperature sensing element. 3,763,440, Cl. 331-66.000.

Gardi, Rinaldo; Vitali, Romano; and Falconi, Giovanni, to Warner-Lambert Company. 17-Esters of 6 alpha, 9 alpha-difluoro-21 desoxyprednisolone. 3,763,196, Cl. 260-397.450.

Gardner, Donald M.: *See—*
McKenna, Lawrence W., Jr.; and Gardner, Donald M., 3,763,117.

Garfinkel, Marvin: *See—*
Engeler, William E.; and Garfinkel, Marvin, 3,762,968.

Garin, Jose Ignacio Martinez, to Cefilac. Hot extrusion of metals. 3,762,203, Cl. 72-255.000.

Garman, Clair. Typewriter shield. 3,762,528, Cl. 197-105.000.

Garot, Lawrence F.; and Armstrong, Laurence W. Bow pull and arrow length indicator. 3,762,222, Cl. 73-380.000.

Garrett Corporation, The: *See—*
Beck, William H.; and Cardwell, Gilbert I., Jr., 3,763,418.

Garrity, James P.: *See—*
Raich, Walter L.; and Garrity, James P., 3,762,085.

Gascon, Jean: *See—*
Charle, Roger; Kalopissis, Gregoire; Viout, Andrio; Aretos, Constantin; and Gascon, Jean, 3,762,863.

Gasparini, Guy: *See—*
Duchenoy, Jacques; Gasparini, Guy; and Marty, Yvon, 3,763,302.

Gatel, Gilbert, to Societe Generale de Constructions Electriques et Mecaniques (Alsthom). Electric control system. 3,763,485, Cl. 340-347.0ad.

Gates, Gregory J. Steam engine. 3,762,276, Cl. 91-197.000.

Gates Rubber Company, The: *See—*
Russ, Paul E., Sr., 3,762,779.

Gatliff, Robert R.: *See—*
Grovenburg, William W.; and Gatliff, Robert R., 3,762,486.

Gaye, John H., to General Electric Company. Ammunition handling system. 3,762,268, Cl. 89-34.000.

Gaylord, John A., to Koch, H., & Sons, Inc. Line release. 3,762,001, Cl. 24-230.00a.

Gayner, Herbert; and Smith, David A., to Aluminum Company of America. Thermally treated container wall. 3,762,598, Cl. 220-54.000.

Gazzola, Valdo; D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., to American Bank Note Company. Plate wiping mechanism for intaglio press. 3,762,319, Cl. 101-155.000.

Gebr. Hofmann, KG Maschinenfabrik: *See—*
Muller, Richard, 3,762,225.

Gebura, Stanley E.: *See—*
Grudus, Gabriel Michael, Jr.; and Gebura, Stanley E., 3,763,084.

Geist, Bernard W., to Fastener Corporation. Safety assembly for fastener driving tool. 3,762,620, Cl. 227-8.000.

Gem Oil Tool Company: *See—*
Alexander, Granison T., Jr., 3,762,472.

Gendron, Lester J. Wall breaching attachment for fire hose. 3,762,645, Cl. 239-271.000.

General Binding Corporation: *See—*
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General Electric Company: *See—*
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General Foods Corporation: *See—*
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General Microwave Corporation: *See—*
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General Mills, Inc.: *See—*
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General Motors Corporation: *See—*
Anthony, Parme G.; and Bond, David N., 3,762,377.
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Malina, John A., 3,762,389.
Peters, Theodore F., 3,762,494.
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Schulz, John C., 3,762,671.
Sharpe, Cecil H., 3,762,855.

Geng, Hellmuth R.; Hajdu, Johann; Skuin, Petar; and Vogt, Edwin, to International Business Machines Corporation. Circuit arrangement for error detection in data processing systems. 3,763,470, Cl. 340-146.1ag.

George, Leslie C., Jr. Expansible fluid rotary engine. 3,762,842, Cl. 418-61.000.

Gerber, Arthur M. Process for the continuous recovery of materials from sea water. 3,763,049, Cl. 252-301.10r.

Gertsch AG, mesne: *See—*
Smolka, Thomas Gordon, 3,762,735.

Gevaert-Agfa N.V.: *See—*
Vanden Eynde, Hector Alfons; Van Poucke, Karel; DeCat, Arthur Henri; and Benoy, Gaston Jacob, 3,762,921.

Gevich, Vladimir Georgievich: *See—*
Tsymbal, Vasily Iosifovich; and Gevich, Vladimir Georgievich, 3,762,254.

Gewerkschaft Eisenhutte Westfalia: *See—*
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Giant Behemoth Industries: *See—*
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Gibbon, Robert Muir: *See—*
Flannigan, William Tait; and Gibbon, Robert Muir, 3,763,198.

Gibbs, Thomas T. Exercising apparatus. 3,762,703, Cl. 272-73.000.

Gibel, Stephen J. Dead-endable self-pressure regulating air nozzle. 3,762,653, Cl. 239-541.000.

Gil-Castillo, Arturo. Removable denture connection. 3,762,049, Cl. 32-5.000.

Gilbert, Daniel, to Carrier Engineering Company Limited. Air distribution apparatus. 3,762,301, Cl. 98-40.00c.

Gilbert, Ronald E., to Gulf Research & Development Company. Method of manufacturing a fluorinated polymer and blends of said fluorinated polymer with polyethylene. 3,763,280, Cl. 260-897.00c.

Giles, James, to American Chain & Cable Company, Inc. Conveyor structure. 3,762,533, Cl. 198-127.00r.

Gillespie, Peter James, to Energy Conversion Limited. Electrochemical cells. 3,762,956, Cl. 136-86.00a.

Gillette Company, The: *See—*
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Glomski, Arthur F., to Allen Electric and Equipment Company. Ignition fault analyser. 3,763,421, Cl. 324-17.000.

Gloucester Engineering Co., Inc.: *See—*
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Goebel, Hellmut; and Raiser, Ernst, to BW-Weber Verwaltungsgesellschaft mit beschrankter Haftung. Machine tool with tool exchanging mechanism. 3,762,036, Cl. 29-568.000.

Goldbeck, Leroy J., to Kimberly-Clark Corporation. Non-woven applique material. 3,762,984, Cl. 161-57.000.

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Gomez, Juan Bautista Riopll. Pretensioning jacks for pretensioning reinforcing wires. 3,762,686, Cl. 254-29.00a.

Gonzalez, Bartolome Gauza. Batting practice device. 3,762,705, Cl. 273-26.00r.

Gooch, John Henry. Railway transmission. 3,762,336, Cl. 105-136.000.

Good, Milton W. Foldable cart with seat. 3,762,737, Cl. 280-36.00c.

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Gore, Ralph E. Hand and arm washer. 3,761,989, Cl. 15-104.920.

Gorman-Rupp Company, The: *See—*
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Gottlieb, Arnold J.; and Majesko, George A., to Driver, Wilbur B., Company. Method for producing metallic filaments. 3,762,025, Cl. 29-419.000.

Gouin, Albert J.; and Hall, Richard H., to Dow Chemical Company, The. Removal of vinylbenzylhalide polymeric deposits from surfaces. 3,762,952, Cl. 134-38.000.

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Goyarts, Wynand M. J. M., to Clark Equipment Company. Universal coupling means for container handling. 3,762,754, Cl. 294-67.00r.

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Granges Essem Aktiebolag: *See—*
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Gray, Ralph B. Anti-drip device. 3,762,591, Cl. 215-100.500.
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Griffith, Rolf P. Copy holder and roll label dispensing device for typewriter. 3,762,529, Cl. 197-133.00r.
Griffith, Russell K., to Standard Oil Company, The. Olefinic nitrile-styrene copolymerization process. 3,763,278, Cl. 260-880.00r.
Grimes, Gary S., to Questor Corporation. Infant feeding means. 3,762,542, Cl. 206-58.000.
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Groepper, Jurgen; and Sanchez, Jose, to Pennwalt Corporation. Curing processes employing beta-substituted diperoxyketals. 3,763,275, Cl. 260-861.000.
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Grouss, Frank A., to Caterpillar Tractor Company. Material lifting and transporting vehicle. 3,762,590, Cl. 214-775.000.
Grovenburg, William W.; and Gatliff, Robert R., to United States of America, Atomic Energy Commission. Big hole drilling bit. 3,762,486, Cl. 175-313.000.
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Grundschober, Friedrich; and Sambeth, Joerg, to Rhone-Poulenc-Textile. Imide-amide copolymers and method of making same. 3,763,075, Cl. 260-30.20t.
Grutza, Zigmund R., to Di-Coat Corporation. Wear resistant diamond coating and method of application. 3,762,882, Cl. 29-195.00c.
GTE International Incorporated: *See—*
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Gutner, Kenneth H. Mirror support method. 3,762,024, Cl. 29-407.000.
Gwilliam, Ralph Derek, to English Clays Lovering Pochin & Company, Limited. Tube pressure filters. 3,762,560, Cl. 210-350.000.
Gyorgy, Paul. Stabilized edible oil and fat compositions containing oil of tempeh. 3,762,933, Cl. 99-163.000.
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Hagen, Alexander; Mewes, Dirk; Gruber, Wolfgang; and Bergmeyer, Hans Ulrich, to Boehringer Mannheim GmbH. Apparatus for introducing a metered amount of sample liquid into a continuous stream of a carrier liquid. 3,762,609, Cl. 222-194.000.
Hagen, Glenn E. Transmission dynamometer. 3,762,217, Cl. 73-136.00a.
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Hall, Joshua D. Telescoping top section camper. 3,762,759, Cl. 296-23.0mc.
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Hamilton, Harold E.; Bamford, Robert P.; and Pastorek, Paul V., to Libbey-Owens-Ford Company. Process for bending a glass sheet to a relatively sharp angle. 3,762,904, Cl. 65-107.000.
Hamisch, Paul H., Sr., to Monarch Marking System Company, The. Re-price marker. 3,762,317, Cl. 101-68.000.
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Hanke, David E., to Kimberly-Clark Corporation. Tampon with multiple strings. 3,762,413, Cl. 128-285.000.
Hankey, James J., to Damon Corporation. Apparatus for balancing a bucket centrifuge rotor. 3,762,635, Cl. 233-23.00a.
Hankins, Harold Charles Arthur; Torsun, Imad Shakir; and Hughes, Gordon, to International Computers Limited. Information storage arrangements. 3,763,486, Cl. 340-324.00a.
Hanks, James V., to Horton Manufacturing Company, Inc. Internal expanding fluid operated clutch for fans. 3,762,517, Cl. 192-85.0ab.
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Harklau, Lanny L., to Minnesota Mining and Manufacturing Company. Spectral densitometer. 3,762,817, Cl. 356-73.000.
Harrington, H. Richard, to Mixing Equipment Co. Mixing system for floating roof tanks. 3,762,690, Cl. 259-108.000.
Harris-Hub Company, Inc.: *See*—
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Hart, James L.; Kao, Peter T.; and Negus, George T., to Eastman Kodak Company. Film processing apparatus. 3,762,300, Cl. 95-89.00r.
Hartka, Theodore J.; and Staley, William C., to Staley, Wm. C., Machinery Corporation. Flexographic printing system. 3,762,323, Cl. 101-350.000.
Hartter, Donald R., to Du Pont de Nemours, E. I., and Company. Tetrasubstituted dicyanopyrazines and related compounds. 3,763,161, Cl. 260-250.00r.
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Harvey, Eric Alfred; and Marter, Peter Edward, to Ilford Limited. Optically inspecting the position and size of magnetic stripes on a movable web. 3,762,822, Cl. 356-199.000.
Hasegawa, Goro, to Canon Kabushiki Kaisha. Exposure control system for a single lens reflex camera with an interchangeable objective lens. 3,762,286, Cl. 95-10.00c.
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Hatschek, Rudolf A.; and Witzke, Gunther G., to Vibro-Meter AG. Cable plug. 3,763,460, Cl. 339-89.00m.
Hatz, Ernst; and Schmuck, Johann, to Motorenfabrik Hatz KG. Air cooled internal combustion engine with noise reducing means. 3,762,497, Cl. 181-33.00k.
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Haw, Waily, to United States of America, Navy. Amplitude independent time of arrival detector. 3,763,436, Cl. 328-147.000.
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Hawle, Erwin. Pipe drill clip. 3,762,743, Cl. 285-197.000.
Hay, Charles, to General Motors Corporation. Self-adjusting take-up bearing. 3,762,783, Cl. 308-207.000.
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Heath, Darrell R.; and Wirth, Joseph G., to General Electric Company. Aminophenoxy benzonitriles. 3,763,211, Cl. 260-465.00e.
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Heine, Richard W.; and Loper, Carl R., Jr., to Wisconsin Alumni Research Foundation. Method for casting gray cast iron composition. 3,762,915, Cl. 75-130.00r.

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Henderson, Miles L., to Phillips Petroleum Company. Alkylation utilizing surge chambers with settling chambers in a common catalyst system. 3,763,266, Cl. 260-683.430.

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Henry, David M.; and Verseef, Jan H., to Eastern Steel Products, Ltd. Snowplow blade. 3,762,077, Cl. 37-41.000.

Hensley, Albert L., Jr.; Nevitt, Thomas D.; and Mahoney, John A., to Standard Oil Company (Indiana). Reforming with rhenium-promoted chromia catalysts. 3,763,035, Cl. 208-136.000.

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Hernandez, Jorge, to SCM Corporation. Dual-function keys for sign change and correction of erroneous entries. 3,762,637, Cl. 235-156.000.

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Hervert, George L., to Universal Oil Products Corporation. Process for producing para-diisopropylbenzene. 3,763,259, Cl. 260-671.00p.

Herzog, Peter, to Polytype AG. Web coating apparatus. 3,762,365, Cl. 118-212.000.

Hescher, Manfred, to Fernseh G.m.b.H. Magnetic head wheel rotor and transformer assembly with anti-rotation locking means. 3,763,327, Cl. 179-100.20t.

Hetznecker, Frank W., to Honeywell Inc. Method and apparatus for removing accumulated paint from paint racks. 3,762,951, Cl. 134-16.000.

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Himmelmann, Wolfgang; Roos, Ernst; and Sobel, Johannes, to Agfa-Gevaert Aktiengesellschaft. Gelatino silver halide emulsion containing a trimesic aldehyde hardening agent. 3,762,926, Cl. 96-111.000.

Hinden, Milton; and Giannone, Charles. Welding pin dispensing magazine. 3,762,541, Cl. 206-56.0df.

Hing, Ally Ong. Tethered ball discount determining apparatus. 3,762,708, Cl. 273-98.000.

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Holmes, George W.; and Frisch, Eldon E., to Dow Corning Corporation, mesne. Method for improving the adhesion between silicone elastomers. 3,762,978, Cl. 156-308.000.
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Holub, Fred F.; and Hoback, John T., to General Electric Company. Imide containing blends and polymeric compositions prepared therefrom. 3,763,087, Cl. 260-41.00r.
Holub, Fred F.; and Evans, Milton L., to General Electric Company. Imido-substituted polyamide compositions blended with polyvinyl chloride. 3,763,273, Cl. 260-857.0un.
Holzer, Helmut; and Scherber, Werner, to Licentia Patent-Verwaltungs-G.m.b.H. Method of producing a semiconductor device. 3,762,967, Cl. 148-187.000.
Holzhauer, Rudolf, to Ruggeberg, August, Firma. Abrasive medium comprising short fibers in the synthetic resin binder. 3,762,894, Cl. 51-298.000.
Hombach, Rudolf; and Theisen, Deiter, to Bayer Aktiengesellschaft. Pressure sensitive adhesive. 3,763,067, Cl. 260-27.00r.
Homer, John C., III; and Stock, John R., to Stock Equipment Company. Method and apparatus for measuring rates of random pulses. 3,763,380, Cl. 307-234.000.
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Horiguchi, Shojiro; Onira, Shozo; Abe, Yoshio; and Hosoda, Tohoru, to Dainichiseika Color & Chemicals Mfg. Co., Ltd. Method for producing metal phthalocyanine type pigment. 3,763,182, Cl. 260-314.500.
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Huslin, Stanley C. Breaker plate fixation device for automotive distributors. 3,763,337, Cl. 200-19.00r.
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Ingelman, Bjorn Gustav-Adolf, to Pharmacia AB. Novel 3,5-substituted 2,4,6-triiodobenzoic acids and salts thereof. 3,763,227, Cl. 260-490.000.
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Ishida, Iwao, to Ginga Electric Industrial Co., Ltd. Method for continuously automatically forming coils and binding each annular coil with a thermally fusable plastic tape. 3,762,016, Cl. 29-205.00r.
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Jarr, Kalus D.; Baker, John Kenneth; and Ufford, David B., to Red Jacket Manufacturing Company. Iron removal filter system. 3,762,550, Cl. 210-126.000.

Jebb, Alan; and Besant, Colin Bowden. Computer input/output equipment. 3,763,479, Cl. 340-172.500.

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Jenkins, Raymond Vaughan, to Ferranti Limited. High voltage series resonant testing circuit arrangements. 3,763,399, Cl. 317-31.000.

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Jett, Clayton E., 20% to Lee, Raymond, Organization, The. Golf training aid. 3,762,720, Cl. 273-183.00d.

Johne, Albrecht; Forster, Karl-Heinz; and Schanze, Klaus, to VEB Polygraph Leipzig, Kombinat fur Polygraphische Maschinen und Ausrustungen. Arrangement for controlling the stacking of printed sheets in multiple color rotary printing machines. 3,762,320, Cl 101-183.000.

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Jonason, Karl Gunnar; Karlsson, Karl Harry; and Remning, Ake Gustaf Vilhelm, to Granges Essem Aktiebolag. Method for manufacturing elongate heat-exchange element blanks. 3,762,031, Cl. 29-471.300.

Jones, Alene H. Fish mobile. 3,762,084, Cl. 40-138.000.

Jones, Cecil R., to Transfer Systems Incorporated. Apparatus for detecting reactor fuel tube failures. 3,762,993, Cl. 176-19.00r.

Jones, John P., Jr., to Mobil Oil Corporation. Marine propeller stern bearing-shaft design and seal arrangement. 3,762,359, Cl. 115-34.00r.

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Kiyoshi, Nakayama, to Kyowa Hakko Kogyo Co., Ltd. Method for producing adenosine diphosphate and adenosine triphosphate. 3,762,999, Cl. 195-28.00n.
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Knutson, Gaylen M., to Union Oil Company of California. Adhesive compositions. 3,763,073, Cl. 260-29.60r.

Kobayashi, Seihin; Torii, Michihiro; and Oshima, Katsuyuki, to Fuji Denki Kagaku Kabushiki Kaisha. Method for producing ferrite thin film body. 3,763,003, Cl. 204-37.00r.

Kober, Alfred E.; and Rossi, Albert, to Esso Research and Engineering Company. Fuel oil composition containing oil-soluble pour depressant polymer and auxiliary flow-improving compound. 3,762,888, Cl. 44-62.000.

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Kohn, Gostave K.; and Singer, Malcolm S., to Chevron Research Company. Bactericidal 3-halo-5-alkyl-delta 2-thiadiazoline-4-one. 3,763,176, Cl. 260-302.00d.

Kolomick, Paul. Hand tool for edging gypsum board. 3,762,046, Cl. 30-172.000.

Kolyer, John M.; and Kveglis, Albert A., to Allied Chemical Corporation. Enamel compositions of diphenol containing polyesters derived from tris (2-hydroxyalkyl) isocyanurates and diisocyanates. 3,763,276, Cl. 260-857.00r.

Komiyama, Katsuhiko; and Iinuma, Yoshio, to Citizen Watch Co., Ltd. Time-setting device for an electronic timepiece. 3,762,153, Cl. 58-23.00r.

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Koslovsky, Helen S. Medicant withdrawal unit. 3,762,673, Cl. 248-154.000.

Kotski, Edward J., to General Electric Company. Electric cable termination module having a gas-trap valve. 3,763,461, Cl. 339-111.000.

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Kranenberg, Helmut, to Bethlehem Steel Corporation. Method for producing cold-workable hypoeutectoid steel. 3,762,964, Cl. 148-12.000.

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Krapcho, John; and Berstein, Jack, to Squibb, E. R., & Sons, Inc. Therapeutically active compounds. 3,763,214, Cl. 260-470.000.

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Kressel, Henry; and Nelson, Herbert, to RCA Corporation. Method of forming region of a desired conductivity type in the surface of a semiconductor body. 3,762,966, Cl. 148-171.000.

Kreuter, Kenneth G.; and Steger, Lyall O., to Robertshaw Controls Company. Piston motor device. 3,762,280, Cl. 92-98.00d.

Kreutzweiser, Charles E., to Electrohome Limited. Stereo speaker design. 3,762,600, Cl. 220-97.00r.

Krieger, Irving B., to Pacific Architects & Engineers Incorporated. Soil adhesion composition of acrylic latex and sodium silicate. 3,763,072, Cl. 260-29.60s.

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Lana, Garnet L. Nail screw driving tool head. 3,762,733, Cl. 279-103.000.

Lande, Oscar A. Containerized liquid dispensing system. 3,762,606, Cl. 222-88.000.

Landwehrkamp, Hans, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Fibre sliver spinning device. 3,762,146, Cl. 57-58.950.

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Langfeldt, Werner, to Inter-Jersey GmbH & Co. Kommanditgesellschaft. Method of making workpieces from a knitted fiber reinforced hardenable synthetic material, and fiber reinforcement for carrying out said method. 3,762,977, Cl. 156-229.000.

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Larson, Walter F. Switching mechanism for monorail conveyors. 3,762,334, Cl. 104-101.000.

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Le Jeune, Andrus. Impact tool. 3,762,022, Cl. 29-275.000.

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Lewis, Sheldon N.; and Yunaska, Matthew R., to Rohm & Haas Company. Nitrocellulose-modified urethane coating compositions and their use in finishing leather. 3,763,061, Cl. 260-13.000.

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Lipshaw, Julius. Automatic tissue processor. 3,762,362, Cl. 118-5.000.

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Livingston, Clifton W. Mine layout applicable to natural resources development. 3,762,771, Cl. 299-19.000.

Lloyd, William E.; Fuller, William J.; Fuller, William S.; and Hazen, William R., to Aqua Fem, Inc. Power aerated douche. 3,762,411, Cl. 128-230.000.

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Loos, John H.; and Wark, Emerson L., to General Motors Corporation. Fresh air feature for room air conditioner. 3,762,182, Cl. 62-427.000.

Lootens, William F., to General Electric Company. Isolated heat-sink semiconductor device. 3,763,403, Cl. 317-234.00r.

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Lugosy, Laszlo; Grossa, Mario; and Pistor, Wolfgang, to Du Pont de Nemours, E. I., and Company. Silver halide photographic images. 3,762,922, Cl. 96-56.000.
Lukavich, Paul J.; and Treasdale, Max J., to Caterpillar Tractor Company. Quick-change cutting edge. 3,762,079, Cl. 37-141.00r.
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Lynn, David. Corner brush. 3,761,990, Cl. 15-160.000.
Lyons, Thomas J., Sr. Pressure means for use with eyeglass frames. 3,762,805, Cl. 351-113.000.
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Schonfeld, Wolfram; and Philipps, Armin, 3,762,201.
Manning, Robert E., to Sandoz-Wander, Inc. Thiazolodiazepines. 3,763,142, Cl. 260-239.0bc.
Manspeaker, Robert O.: *See—*
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Marathon Oil Company: *See—*
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Marble, Chester B., to General Electric Company. Simulated pendulum clock. 3,762,155, Cl. 58-29.000.
Marcellis, Alphonso W.: *See—*
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Marcere, Alluren Leonard: *See—*
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Markiewitz, Kenneth H., to Atlas Chemical Industries, Inc. Polymers prepared by reacting urea with an amino alcohol or diamine followed by methylolation with formaldehyde. 3,763,106, Cl. 260-69.00r.
Markovac, Anica: *See—*
Ash, Arthur B.; Blumbergs, Peter; and Markovac, Anica, 3,763,148.
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Marse, Allan V.: *See—*
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Marsh, Frank Hubert; and Hegarty, James Kevin, to Platt International Limited. Apparatus for wet processing of textile fabrics. 3,762,189, Cl. 68-177.000.
Marsh, Richard O. Pile coupling and method of pile driving. 3,762,173, Cl. 61-53.000.
Marshall, Joseph, to Thomas & Betts. Flat multi-signal transmission line cable with plural insulation. 3,763,306, Cl. 174-115.000.
Marter, Peter Edward: *See—*
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Martin, Jerry, Company: *See—*
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Martin, Michael F.; and Keeler, Lorne S. Athletic undergarment. 3,761,961, Cl. 2-78.00c.
Martin, Patrick Henry; and Stearns, Wesley Joseph, Jr., to Dow Chemical Company, The. Coating compositions from solid epoxy resins and adducts of aziridine compounds with polyepoxides. 3,763,100, Cl. 260-47.0en.
Martin Tracker Corporation: *See—*
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Marty, Yvon: *See—*
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Maruta, Iwao; deceased (by Maruta, Kiyoko; and Maruta, Yoshi; representatives); Arai, Haruhkio; and Horin, Shoji, to Kao Soap Co., Ltd. Water-solubilized polyvinyl adhesive method. 3,762,987, Cl. 161-251.000.
Maruta, Kiyoko: *See—*
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Maruta, Yoshi: *See—*
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Marx, John W., to Phillips Petroleum Company. Decreasing the permeability and producing subterranean formations. 3,762,475, Cl. 166-272.000.
Marz, Frank H., to Bunker Ramo Corporation. Reset system for digital electronic timepiece. 3,762,152, Cl. 58-23.00r.
Maschinenfabrik Benninger AG: *See—*
Probst, Willi; and Weber, Hans, 3,762,870.
Massachusetts Institute of Technology: *See—*
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Massebeuf, Jacques: *See—*
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Massie, Stephen N., to Universal Oil Products Company. Dimerization of styrene compounds. 3,763,256, Cl. 260-668.00c.
Mathews, Glenn W.: *See—*
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Mathews, Victor M., Jr., to MKC Electronics Corporation. Sensing mechanism for slicing machine control system. 3,762,257, Cl. 83-364.000.
Mathis, Ronald D.; and Guillory, Jack P., to Phillips Petroleum Company. Polymer stabilization with nickel derivatives of β-dithones. 3,763,092, Cl. 260-45.75n.
Matsui, Norio: *See—*
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Matsumoto, Masakazu. Chuck for tool. 3,762,731, Cl. 279-51.000.

Matsumoto, Seiji, to Fuji Photo Film Co., Ltd. Method and apparatus for electrophotography. 3,762,811, Cl. 355-3.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
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Mattel, Inc.: *See—*
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Matthews, Richard P. Display container. 3,762,544, Cl. 206-78.00r.

Matthis, Hans, to Hofliger & Karg. Apparatus for stepwise transport of webs of synthetic plastic material or the like. 3,762,617, Cl. 226-32.000.

Matumura, Teiji: *See—*
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Matusik, Frank J.: *See—*
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Mawhinney, Robert C., to MB Associates. Lethal expandible projectile. 3,762,329, Cl. 102-42.00c.

Max Co., Ltd.: *See—*
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Max-Dal Aero Applicators Manufacturers, Inc.: *See—*
Dalhaus, Robert R., 3,762,649.

Maxwell, Hugh S., to General Electric Company. Constant speed driven continuous rolling mill. 3,762,194, Cl. 72-8.000.

May, Howard F.; and Manna, Michael C., to General Electric Company. Gas turbine exhaust silencer. 3,762,498, Cl. 181-50.000.

Mayes, Joseph F. Protective cover for fishing reel. 3,762,592, Cl. 220-4.00b.

Maytag Company, The: *See—*
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Mayusumi, Tatsuki: *See—*
Ikebe, Kenji; Tano, Shigeru; Sasaki, Kiyomi; and Mayusumi, Tatsuki, 3,762,135.

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Strizhenko, Vitaly Evgenievich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Kononenko, Vadim Grigorievich; Maznichenko, Stanislav Anisimovich; Stelmakh, Viktor Alexeevich; and Schekochikhin, Serafim Vasilievich, 3,762,278.

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Mc Cabe, John S., to Chicago Bridge & Iron Company. Underwater tanker ballast water/oil separation. 3,762,548, Cl. 210-170.000.

Mc Caully, Ronald J., to American Home Products Corporation. Preparation of intermediates for the preparation of 1,3-dihydro-2H-1,4-benzodiazepin-1-ones. 3,763,171, Cl. 260-295.0pa.

Mc Cormick, Harold E.: *See—*
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Mc Kinney, Richard W.; Katchka, Jay R.; and Hendrick, Fred W., to Robertshaw Controls Company. Fluid flow control device with baffles. 3,762,681, Cl. 251-61.100.

McCallister, Dennis L. Sewing machine thread supply spool friction brake. 3,762,615, Cl. 223-106.000.

McCardell, Willard B., Jr.: *See—*
Taormina, Anthony J.; and McCardell, Willard B., Jr., 3,763,458.

McCaul, James F.; and Compton, Lloyd A., to Schokbeton Products Corporation. Multilevel concrete building of precast modular units. 3,762,115, Cl. 52-236.000.

McCord Corporation: *See—*
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McCordell, Derek Dexter: *See—*
Rayment, John; McCordell, Derek Dexter; and Parr, Colin, 3,762,866.

McCoy, Lowell R., to Rockwell International Corporation. Secondary battery with movable shutter means between fixed electrodes. 3,762,959, Cl. 136-141.000.

McCray, Walter A., to Foseco International, Limited. Clip for securing hot top lining slabs. 3,762,033, Cl. 29-522.000.

McDonald, Bernard. Medical examining instrument. 3,762,400, Cl. 128-18.000.

McDonald, Gerald J.: *See—*
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McEntree, Harry R.; and Razzano, John S., to General Electric Company. Hydrolysis of alkylalkenyldichlorosilane. 3,763,212, Cl. 260-448.20e.

McFadgen, Robert N., to Baker, J. E., Company, The. Refractory composition. 3,763,085, Cl. 260-41.00b.

McIntyre, Richard F., to United States Elevator Corporation. Elevator rail grab safety apparatus. 3,762,512, Cl. 188-189.000.

McJunkin, James G., to Rohr Industries, Inc. Folding seat for transportation type vehicle. 3,762,764, Cl. 297-14.000.

McKenna, Lawrence W., Jr.; and Gardner, Donald M., to Monsanto Company. Aqueous alkali removable pressure sensitive adhesives. 3,763,117, Cl. 260-78.50e.

McKeon, John Francis; Heiple, Danforth Kingsbury; and Carr, Louis Eugene, to Westinghouse Air Brake Company. Railed vehicle-carrier system. 3,762,337, Cl. 105-159.000.

McLaughlin, John T. Cabinet for dispensing medicines at predetermined times. 3,762,601, Cl. 221-2.000.

McMahan, William H., to American Laser Corporation. Ion laser plasma tube cooling device and method. 3,763,442, Cl. 331-94.50d.

McMillan, Thurmond D.: *See—*
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McMullin, Donald, Jr.: *See—*
Becker, Roger T.; McMullin, Donald, Jr.; and Nelson, John J., 3,762,535.

Meade, James R. Article of furniture. 3,761,969, Cl. 5-108.000.

Meadows, Donald M.: *See—*
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Medard, Paul: *See—*
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Medial de Toledo & Cie: *See—*
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Mefina S.A.: *See—*
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Meginnis, George B.: *See—*
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Meiners, Elmo R., to M&W Gear Company, Inc. Chisel plow construction. 3,762,483, Cl. 172-700.000.

Meiser, Charles H., Jr., to Thiokol Chemical Corporation. Composition comprising carboxyl-terminated polymers and aziridines. 3,763,132, Cl. 260-94.70n.

Melde, Chris R. Dentist drill. 3,762,052, Cl. 32-27.000.

Melsek, Norbert J., to Signode Corporation. Dunnage tie-down arrangement for freight loads. 3,762,580, Cl. 214-10.50d.

Mendelson, Ralph R. Oil-fired, infrared heater. 3,762,390, Cl. 126-92.00r.

Mendoza, Emilio. Automated liquid penetrant inspection system. 3,762,216, Cl. 73-104.000.

Mente, Glen Allen; Kraklow, Daniel Paul; and Schneider, Virgil Albert, to Kent Feeds, Inc., mesne. Pork production center. 3,762,372, Cl. 119-16.000.

Menzin, Marvin; Blanz, John H.; Harvey, Andrew C.; and Rhee, San Soon, to American Velcro, Inc. Production of a continuous molded plastic strip. 3,762,000, Cl. 24-204.000.

Mercier, Rene: *See—*
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Merck & Co., Inc.: *See—*
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Merianos, John J.; Shay, Edward Griffin; Adams, Philip; and Petrocci, Alfonso N., to Millmaster Onyx Corporation. N-(Pentachlorobiphenyl)ethylene diamine. 3,763,238, Cl. 260-570.50p.

Merino, Dennis H.; Bales, Joseph H.; Bosley, Denis; Prodger, Brian S.; Ruppel, Kurt; and Schlau, Floyd E., to Mattel, Inc. Toy hill-climbing system. 3,762,095, Cl. 46-202.000.

Merkel, Karl: *See—*
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Merlin Gerin, Societe Anonyme: *See—*
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Merriman, James R.; Pashley, John H.; Stephenson, Michael J.; and Dunthorn, David I., to United States of America, Atomic Energy Commission. Process for the separation of components from gas mixtures. 3,762,133, Cl. 55-44.000.

Merrow, George W.; West, Robert F.; Eliason, Carl E.; and Guarnaccia, Joseph J., to Stanley Works, The. Hand tool handle. 3,762,453, Cl. 145-61.00c.

Merz, Herbert; Freter, Kurt; and Zeile, Karl, to Boehringer Ingelheim G.m.b.H. N-Cinnamyl-4-(3'-hydroxyphenyl)-4-propionyl-piperidine and salts for relieving pain. 3,763,164, Cl. 724-267.000.

Merz, Josef, to Daimler-Benz Aktiengesellschaft. Rotary piston engine of trochoidal construction. 3,762,840, Cl. 418-5.000.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
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Metagraphic Systems, Inc.: *See—*
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Metcalfe, Joseph E., III; Rightmire, Robert A.; and Marse, Allan V., to Standard Oil Company, The. Process for enhancing the capacity of a carbon electrode. 3,762,954, Cl. 136-22.000.

Metropolitan Life Insurance Co.: *See—*
Lemons, Thomas M.; and Neenan, Charles, 3,762,083.

Metz, Stephen A.; and Smidt, Fred A., Jr., to United States of America, Navy. Production of vacancies in metals by laser bombardment. 3,762,961, Cl. 148-4.000.

Mewes, Dirk: *See—*
Hagen, Alexander; Mewes, Dirk; Gruber, Wolfgang; and Bergmeyer, Hans Ulrich, 3,762,609.

Meyer, Herbert S., Jr., to Cummings, William E., d/b/a Jeffersontown Specialty Company. Self-ejecting safety device. 3,762,089, Cl. 42-70.00f.

Meyer, Ulrich, to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung. Steering column actuator. 3,762,491, Cl. 180-79.100.

Michael, Melvin C.: *See—*
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Michael, Russell H. Mower blade. 3,762,138, Cl. 56-295.000.

Mikami, Itsuo: *See—*
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Mikeska, Alan J., to United States of America, Air Force. Stress relief grooves for pyrolytic graphite coated rocket nozzle inserts. 3,762,644, Cl. 239-265.110.

Milberger, Lionel J.; Swift, Gilbert; and Moore, William M., to Martin Tracker Corporation. Delamination detector. 3,762,496, Cl. 181-.5ac.

Milburn, George; and Chetter, John, to United Kingdom Atomic Energy Authority. Nuclear reactor fuel element assembly. 3,762,996, Cl. 176-78.000.

Milchem Incorporated: *See—*
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Cheaser, Billy G.; and Allen, Floyd Lee, 3,762,485.

Milhollan, Thomas H.; and Pasquate, David M., to Precision-Kidd, Inc. Strip steel cutting die stock and method for its manufacture. 3,762,963, Cl. 148-1.00z.

Miller, Arthur J.; and Miller, Robert A., to Carrier Corporation. Inlet structure for turbomachine. 3,762,833, Cl. 415-136.000.

Miller, Gordon H., to Texaco Inc. Preparation of curable polymeric triazine compositions. 3,763,115, Cl. 260-78.40n.

Miller, Ira H., to Owens-Illinois, Inc. Dual seal pourout fitment and closure combination. 3,762,612, Cl. 222-479.000.

Miller, Lacy J. Safety apparatus. 3,762,499, Cl. 182-3.000.

Miller, Robert A.: *See—*
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Miller, Stewart F.: *See—*
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Millis, Edwin G., to Textool Products, Inc. Plug-in type sockets for testing semiconductors. 3,763,459, Cl. 339-75.00m.

Millmaster Onyx Corporation: *See—*
Merianos, John J.; Shay, Edward Griffin; Adams, Philip; and Petrocci, Alfonso N., 3,763,238.

Milprint, Inc.: *See—*
Elliott, Bentley W., 3,763,082.

Mina, George Louis, to American Cyanamid Company. Process for preparing zinc 2-benzamidothiophenate. 3,763,199, Cl. 260-429.900.

Minamida, Isao: *See—*
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Mincy, David R., to Giant Behemoth Industries. Randomly reflecting lamp. 3,762,082, Cl. 40-34.000.

Minnesota Mining and Manufacturing Company: *See—*
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Stow, Robert H.; and Groff, Gaylord L., 3,762,946.
Tungseth, Barry F.; Olson, Donald E.; and Skriba, Louis J., 3,762,446.
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Minolta Camera Kabushiki Kaisha: *See—*
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Misaka, Yasunao; Kuriyama, Mitsuo; and Mukai, Tsuneo, to Kurita Water Industries, Limited. Process for purifying water that contains organic matter. 3,763,038, Cl. 210-4.000.

Mitchell, Lawrence C., to Ethyl Corporation. Process for production of polybrominated aromatics. 3,763,248, Cl. 260-649.00d.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Sato, Takehiko; Onishi, Yuji; Omori, Toshiji; Abe, Yoshihito; and Suehiro, Kazuyasu, 3,763,262.

Mitsubishi Petrochemical Company Limited: *See—*
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Mitsuboshi-Sangyo Co., Ltd.: *See—*
Iwasaki, Hajime; Tomita, Yasuo; Takase, Takashi; and Saitoh, Hirokasu, 3,762,975.

Mitsuhashi, Ken Ichi: *See—*
Usui, Keizaburo; Mitsuhashi, Ken Ichi; and Isome, Takashi, 3,762,495.

Mitsuhata, Teruhisa, to Nippon Electric Company, Limited. Solid state luminescent display device. 3,763,405, Cl. 317-235.00r.

Miura, Kiyoshi; Nakano, Yoshiyuki; and Kawatake, Koichi, to Hitachi, Ltd. Method of operating and control system for combined cycle plants. 3,762,162, Cl. 60-49.000.

Mixing Equipment Co.: *See—*
Harrington, H. Richard, 3,762,690.

Miyake, Toshio: *See—*
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Miyata, Tomiaki; and Sakamoto, Kiichiro, to Fuji Photo Film Co., Ltd. Image reproducing system. 3,763,308, Cl. 178-5.20r.

Miyata, Yoshihiko: *See—*
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MKC Electronics Corporation: *See—*
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Mobil Oil Corporation: *See—*
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Mobley, George W., Sr. Fire protection system. 3,762,477, Cl. 169-2.00r.

Modern Caster Co., Inc.: *See—*
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Modern Faucet Mfg. Co.: *See—*
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Modernfold of Canada Limited-Modernfold du Canada Limitee: *See—*
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Moeller & Neumann GmbH: *See—*
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Mohasco Industries, Inc.: *See—*
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Mojonnier, Albert B., to Mojonnier, Albert, Inc. Plastic seamless gable top container. 3,762,625, Cl. 229-17.00g.

Mojonnier, Albert, Inc.: *See—*
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Moledeth Development Company Ltd.: *See—*
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Molins Limited: *See—*
Davies, Robert William; Veness, Maxwell Francis; and Thornton, Leonard, 3,762,130.

Mollering, Karl F., to Dragerwerk Aktiengesellschaft. Method and apparatus for mixing pressure gases particularly for respirators and medical apparatus. 3,762,427, Cl. 137-7.000.

Molzahn, Herbert W., to International Harvester Company. Final drive system for self-propelled vehicle. 3,762,490, Cl. 180-70.00r.

Monarch Marking System Company, The: *See—*
Hamisch, Paul H., Sr., 3,762,317.

Money, Maxine B.: *See—*
Morrison, Willard L., 3,762,415.

Moneymaker, John R.: *See—*
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Monsanto Australia Limited: *See—*
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McKenna, Lawrence W., Jr.; and Gardner, Donald M., 3,763,117.
Phillips, Wendell Gary, 3,763,284.

Moodie, Donald E., to Polaroid Corporation. Multiple photograph camera system. 3,762,293, Cl. 95-37.000.

Moody, Anthony Gifford; and Ripley, Ian Stanley, to Imperial Chemical Industries Limited. Polymerisation processes using improved Friedel crafts catalysts. 3,763,125, Cl. 260-81.000.

Mooney Chemicals, Inc.: *See—*
Collins, Albert V., 3,762,890.

Moore, Robert M. Automatic fluid flow control for pressure actuated devices. 3,762,433, Cl. 137-469.000.

Moore, Thomas W.; Dimeo, Frank N.; and Collins, Richard E., to Academic Associates, Inc. Defibrillation electrode. 3,762,420, Cl. 128-417.000.

Moore, William H.: *See—*
Weaver, Max A.; Straley, James M.; and Moore, William H., 3,762,861.

Moore, William M.: *See—*
Milberger, Lionel J.; Swift, Gilbert; and Moore, William M., 3,762,496.

Moran, John J., to Hycel, Inc. Loop conveyor for automatic chemical testing apparatus. 3,762,879, Cl. 23-259.000.

Morat, Franz, GmbH, Firma: *See—*
Doslik, Peter, 3,763,313.
Schmidt, Gerhard; and Jansch, Werner, 3,762,185.

Moreau, Jerry P.: *See—*
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Morelli, Dino: *See—*
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Morgan, Thomas Edward, to International Telephone and Telegraph Corporation. Cable strap with multiple tooth pawl. 3,761,999, Cl. 24-16.0pb.

Morgott, Horst; and Schmalzl, Dieter, to Siemens Aktiengesellschaft. Control unit for electronic systems. 3,763,451, Cl. 335-206.000.

Morii, Eiji; Furuya, Kazuya; Sato, Shui; and Wakabayashi, Yasuo, to Konishiroku Photo Industry Co. Ltd. Photographic gelatinous coating composition. 3,762,924, Cl. 96-94.000.

Morikawa, Yoshiyuki: *See—*
Yamada, Kaiiti; Morikawa, Yoshiyuki; and Matsumoto, Hidenosuke, 3,762,178.

Morimoto, Hiroshi; and Tatsumi, Masanori, to Toray Industries, Inc. Process for the separation of styrene from thermally cracked petroleum by polymer inhibition and extractive distillation. 3,763,015, Cl. 203-9.000.

Morita, Katsuhiko, to Matsushita Electric Industrial Co., Ltd. Pickup cartridge with magnet armature having opposite axial sides of like polarity and control portion of opposite polarity. 3,763,335, Cl. 179-100.41k.

Morley, John D.; and Forgash, Paul, to Advanced Technologies, Inc. Leak testing apparatus and methods. 3,762,212, Cl. 73-40.700.

Morrell, John, & Co.: *See—*
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Morris, Donald E.: *See—*
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Morris, Richard: *See—*
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Morrison, Charles R.: *See—*
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Morrison, Glenn C.: *See—*
Wise, Lawrence D.; and Morrison, Glenn C., 3,763,185.

Morrison, Willard L., to Money, Maxine B. Anti-bacterial menses absorbing pads. 3,762,415, Cl. 128-290.000.

Morse, Stephan L. Device for reducing severity of impact forces. 3,762,505, Cl. 188-1.00c.

Morton, Donald E.; and Leiser, Roger S., to Staley, A. E., Manufacturing Company. Rejuvenation of deteriorated anion exchange resins occluded with organic impurities. 3,762,948, Cl. 127-46.00a.

Morton, Evans T.: *See—*
Evans, John M.; and Morton, Evans T., 3,762,112.

Morton, Roger R. A., to Bausch & Lomb Incorporated. Threshold circuit for converting a video signal to a binary video signal. 3,763,357, Cl. 235-92.0pc.

Morton-Norwich Products, Inc.: *See—*
Alaimo, Robert J.; and Goldenberg, Marvin M., 3,763,174.

Mos Technology Inc.: *See—*
Douglass, Robert S.; and McDulin, C. Alan, 3,762,039.

Moss, Edward; and Forbes, Walter Warrick Wright, to National Research Development Corporation. Artery entry tool. 3,762,416, Cl. 128-305.000.

Moss, Theron V. Scrubbing or buffing device. 3,761,991, Cl. 15-209.00r.

Mossner, Eugene O.: *See—*
Proksch, Frederick D.; Alt, Robert M.; Lagemann, James E.; Mossner, Eugene O.; and Rediger, John R., 3,762,489.

Mossotti, Victor G.; and Eakin, Judith A., to University of Illinois Foundation. Modulator apparatus utilizing piezoelectric plates. 3,763,385, Cl. 310-8.300.

Motes, Jesse R.: *See—*
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Motor Wheel Corporation: *See—*
Adams, Leslie R., 3,762,677.

Motorenfabrik Hatz KG.: *See—*
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Corso, Vincent A.; and Dattilo, Donald J., 3,762,721.
Race, William J., 3,763,332.
Spanjer, Keith Gordon, 3,763,300.

Mott, James D., to Hydril Company. Subsurface well apparatus and method. 3,762,471, Cl. 166-224.00s.

Mowbray, James H.: *See—*
MacPhee, John; Mowbray, James H.; Noonan, Daniel C.; Remillard, Joseph A.; Scott, Robert; and Deninger, Henri M., 3,763,422.

Mras, Raymond J.: *See—*
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Muir, Thomas G., to United States of America, Navy. Shrapnel sonar. 3,763,463, Cl. 340-1.00r.

Mukai, Tsuneo: *See—*
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Mullan, Norman P. O.; and Zamarra, Paul A. Molded plastic landscape edging and border structure. 3,762,113, Cl. 52-102.000.

Muller, Friedrich, to Aristo-Werke Dennert & Pape KG. Low slip belt drive. 3,762,232, Cl. 74-231.00m.

Muller, Richard, to Gebr. Hofmann, KG Maschinenfabrik. Apparatus for balancing motor vehicle wheels. 3,762,225, Cl. 73-457.000.

Muller, Robert: *See—*
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Muller, Robert E., to Astron Dental Corporation. Equipment for molding dentures. 3,762,848, Cl. 425-175.000.

Muller, Willi, to Siemens Aktiengesellschaft. Voltage transformer for fully insulated, metal-clad high voltage switching installations. 3,763,378, Cl. 307-149.000.

Mullner, Wilhelm, to Waagner-Biro A.G. Method and apparatus for drying pulpy slurries. 3,762,063, Cl. 34-8.000.

Munschy, Dorothy G. Disposable shoe. 3,762,075, Cl. 36-2.50e.

Murakami, Yukio, to Leader Denshi Kabushikikaisha. Ghost identification means in a television receiver. 3,763,314, Cl. 178-7.30r.

Murata Manufacturing Co., Ltd.: *See—*
Toyoshima, Isao; Ishiyama, Hideki; and Watanabe, Kazuhiro, 3,763,446.

Murphy, Guy C.: *See—*
Carlson, Robert G.; Crawford, Joseph H.; Farmer, Edward R.; Murphy, Guy C.; and Salemme, Charles T., 3,762,835.

Murray, Dudley Charles; and Curtis, Gordon Wilfred, to Pains-Wessex Limited. Pyrotechnic devices. 3,762,327, Cl. 102-37.800.

Murto, Tapio Henrikki; and Emslie, Kenneth Douglas, to Bell Canada-Northern Electric Research Limited. Telephone audio signalling arrangement. 3,763,326, Cl. 179-99.000.

Musante, Thomas J., to Necessa Products Co., Inc. Garment hanger assembly. 3,762,614, Cl. 223-98.000.

Myer, Jon H., to Hughes Aircraft Company. Optical angle measuring system. 3,762,819, Cl. 356-138.000.

Myers, Kent R. Ventilated suit. 3,761,962, Cl. 2-79.000.

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Nakayama, Kiyoshi; Furuya, Akira; and Kato, Fumio, to Kyowa Hakko Kogyo Co., Ltd. Process for producing ribosides of heterocyclic organic bases by fermentation. 3,763,008, Cl. 195-28.00n.

Narayanan, Venkatachala Lakshmi; and Setescak, Lina Louise, to Squibb, E. R., & Sons, Inc. 4-Azatricyclo[4.3.1.$1^{3,8}$]undecan and related compounds. 3,763,165, Cl. 260-268.0pc.

Narr, Berthold: *See—*
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Nassimbene, Ernie George. Retrospective pulse modulation decoding apparatus. 3,763,353, Cl. 235-61.11e.

National Cash Register Company, The: *See—*
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Nayfa, James E.; and Stanley, Andrew D. Floor surface cleaning and polishing machine. 3,761,987, Cl. 15-50.00r.

Necessa Products Co., Inc.: *See—*
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Nedreski, Robert Joseph, to General Electric Company. Static means for generating inertia compensation signals in reel drives. 3,762,663, Cl. 242-75.510.

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Nelson, Maynard E.; and De Witt, Robert G. Fishing rod support and hook setting apparatus. 3,762,090, Cl. 43-15.000.

Nelson, Robert C., to West Virginia Armature Company. Portable belt conveyor. 3,762,532, Cl. 198-117.000.

Nesson, Israel, to Berkey Photo, Inc. Camera shutter assembly. 3,762,289, Cl. 95-10.0ct.

Neuwirth, Peyton Sidney. Cotton dispenser. 3,762,790, Cl. 312-328.000.

Nevitt, Thomas D.: *See—*
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Newall, Christopher Earle: *See—*
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Newcombe, Jack; Motes, Jesse R.; and Kmiecik, James E., to Cities Service Company. Selective hydrolysis. 3,763,235, Cl. 260-558.00a.
Newcomer, J. L., to Food Technology Inc. Elimination of cooking odors. 3,762,394, Cl. 126-300.000.
Newman, Stanley R.; Yamamoto, Roy I.; and Von Allmen, Ronald W., to Texaco Inc. Detergent motor fuel containing the salt reaction product of a paraffinic oil oxidate and a substituted urea. 3,762,889, Cl. 44-66.000.
Newson, Ivan Henry; and Hodgson, Thomas David, to United Kingdom Atomic Energy Authority. Heat transfer members. 3,762,468, Cl. 165-177.000.
Newstead, Charles, to Girling Limited. Automatic adjusters for internal shoe vehicle wheel drum brakes. 3,762,510, Cl. 188-79.50p.
Newton, Alan Branford; and Rose, John Brewster, to Imperial Chemical Industries Limited. Aromatic polymers of 7 halo-2-hydroxy-10,10-dioxophenoxathiins. 3,763,103, Cl. 260-99.000.
Newton, Russell A.: *See—*
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Nicholas, David C., to Iowa State University, Research Foundation, Inc. System and method for differential pulse code modulation of analog signals. 3,763,433, Cl. 325-38.00b.
Nichols, Wayne Eugene: *See—*
Kapel, Joseph George; Nichols, Wayne Eugene; and Zebe, Charles William, 3,763,325.
Nicholson, Joseph M. Self-centering chamfer tool. 3,762,831, Cl. 408-146.000.
Nielsen, Erling Juul, to Scan-Dia. Machine for grinding and polishing metallographic and mineralogic samples. 3,762,103, Cl. 51-110.000.
Niezoldi & Kramer GmbH: *See—*
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Nigro, Louis V., to Gillette Company, The. Apparatus for controlling discharge of material from a pressurized dispensing package. 3,762,611, Cl. 222-402.130.
Nilsson, Jan, to Allmanna Svenska Elektriska Aktiebolaget. Solution heat treatment of hardenable aluminium alloys. 3,762,962, Cl. 148-11.50a.
Nippon Columbia Kabushikikaisha: *See—*
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Nishikawa, Mitsuo, to Max Co., Ltd. Binder for grape vines. 3,762,621, Cl. 227-76.000.
Nishimura, Hideo; Kano, Kimio; and Ishigaki, Tamotsu, to Toyoda Koki Kabushiki Kaisha. Machine control apparatus for a computer controlled machine tool system. 3,763,360, Cl. 235-151.110.
Nishizawa, Junichi; and Takusagawa, Masahito, to Handotai Kenkyu Shinkokai. Growth apparatus for a liquid growth multi-layer film. 3,762,367, Cl. 118-422.000.
Nissan Motor Company, Limited: *See—*
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Nittel, Fritz; Pollet, Robert Joseph; and Van Poucke, Raphael K., to Agfa-Gevaert N.V. Method of incorporating photographic adjuvants into hydrophilic colloids. 3,762,925, Cl. 96-100.000.
N.K. Verwaltungs AG: *See—*
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Noack, Dieter, to Siemens Aktiengesellschaft. High-voltage circuit breaker equipped with means for placing a resistor in parallel with the breaker contact during breaker closing operations. 3,763,340, Cl. 200-148.00d.
Nofziger, Neil B.: *See—*
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Nokes, Earl T. Necktie with simulated four-in-hand knot and tie-tac therefor. 3,761,963, Cl. 2-150.000.
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Nowicki, Casimir W., to Owens-Illinois, Inc. Leak detector. 3,762,213, Cl. 73-45.300.
Noyle, Clarence L., to Dow Chemical Company, The. Thienyliodonium salts. 3,763,187, Cl. 260-332.30r.
Nuclear Materials and Equipment Corporation: *See—*
Shapiro, Zalman M., 3,762,026.
Nufer-Optik Neostyle Walter A. Nufer: *See—*
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Ochiai, Takeshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Skid control apparatus. 3,762,775, Cl. 303-21.00p.
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Oertel, Gunter; Holtschmidt, Hans; Dollhausen, Manfred; and Bock, Eugen, to Bayer Aktiengesellschaft. Adhesives containing diphenylmethane tetraisocyanate derivatives. 3,763,110, Cl. 260-77.5ap.
Oertel, Harald; Reiff, Helmut; and Dieterich, Dieter, to Bayer Aktiengesellschaft. Polyurethane elastomers with high affinity for dyes. 3,763,058, Cl. 260-2.5ay.
of California, a division of U.S. Industries Inc.: *See—*
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Offutt, Carl R., to Whirlpool Corporation. Timer with cycle and time dependent runout for dryer. 3,762,064, Cl. 34-45.000.
O'Hare, Louis Richard. Hand warmer battery heater. 3,762,393, Cl. 126-263.000.
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Oki Densen Kabushiki Kaisha: *See—*
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Okuniewski, Vincent F.; and Flowers, Leonard B. Diamond bead coupling device. 3,762,562, Cl. 210-460.000.
Okuniewski, Vincent F.; and Flowers, Leonard B. Wedge lock coupling device. 3,762,565, Cl. 210-460.000.
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Kirman, Ivor, 3,762,916.
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Olson, Donald E.: *See—*
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Olson, Gust A.; and Wilcox, Doyle E., to North American Rockwell Corporation. Optical-transfer band for reading embossed characters. 3,762,800, Cl. 350-160.00r.
Olympic Surgical Company, Inc.: *See—*
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Oppenheimer, Edgar D., to Thermatool Corporation, mesne. Air cooled magnetic structure for use in high frequency welding and heating. 3,763,342, Cl. 219-59.000.

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Orita, Toyoki; and Hara, Yoshiaki, to Industrial Science & Technology, Agency of. Fluidic device. 3,762,445, Cl. 137-806.000.

Ornstein, Charles; Corson, Floyd L.; and Schenck, Fred W., to CPC International Inc. Crystallizer. 3,762,947, Cl. 127-15.000.

Orr, John L., to Keystone Consolidated Industries, Inc. Dead bolt lock. 3,762,750, Cl. 292-140.000.

Ortega, Henry S. Releasable signpost receptacle. 3,762,674, Cl. 248-158.000.

Osborn, Robert O., to Du Pont de Nemours, E. I., and Company. Heat shrinkable material with moveable interlayer. 3,762,983, Cl. 161-49.000.

Oshima, Katsuyuki: *See—*
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Oude Alink, Bernardus A., to Petrolite Corporation. Corrosion inhibiting method using substituted succinimides. 3,762,873, Cl. 21-2.70r.

Overton, Billy Joe, to Wayne Manufacturing Company. Rear dump mechanisms for road sweepers. 3,761,988, Cl. 15-83.000.

Ovshinsky, Stanford R.; and Fleming, Gordon R., to Energy Conversion Devices, Inc. Light emitting display array with non-volatile memory. 3,763,468, Cl. 340-166.0el.

Owen, Barry C., to Ex-Cell-O Corporation. Apparatus for folding, closing and sealing a container flat end closure. 3,762,132, Cl. 53-378.000.

Owens, Carlos L.; and Cutting, Arch E., to Southern Machinery Company. Off-loom cloth take-up or winder. 3,762,662, Cl. 242-67.100.

Owens, Clark M.: *See—*
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Ross, Edmund L., 3,762,105.
Salisbury, Charles W.; Schepman, Jon D.; and Nofziger, Neil B., 3,762,901.

Owings, Joseph W., to American Standard, Inc. Integrated plumbing fitting. 3,761,967, Cl. 4-192.000.

Ownby, Clifford H. Automatic battery charging control device and apparatus. 3,763,415, Cl. 320-6.000.

Oxy Metal Finishing Corporation: *See—*
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Pacific Architects & Engineers Incorporated: *See—*
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Chaisson, William P., 3,762,099.

Pains-Wessex Limited: *See—*
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Palladino, Michael J., to General Electric Company. Subcarrier regenerator and pal identifier system. 3,763,309, Cl. 178-5.40p.

Palmer-Shile Company: *See—*
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Paniplus Company, The: *See—*
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Pansini, Andrew L. Connector device. 3,762,749, Cl. 403-341.000.

Papritz, Franz, to Haag-Streit AG. Ophthalmological apparatus with a slit illumination for taking photographic views of the eye. 3,762,803, Cl. 351-7.000.

Pardee, Richard L. Water pollution control. 3,762,168, Cl. 61-1.00f.

Park, W. Dean: *See—*
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Park, Yong S.; and Pekosh, Raymond J., to Zenith Radio Corporation. Method and apparatus for grading the screen of a black surround color tube. 3,762,284, Cl. 95-1.00r.

Parker, Rollin J., to General Electric Company. Magnet assembly. 3,763,334, Cl. 179-115.50r.

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Parker-Hannifin Corporation: *See—*
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Parkland International, Inc.: *See—*
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Parmentier, Alfred Henri. Slurry concentrator and filter apparatus. 3,762,551, Cl. 210-141.000.

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Poulsen, Ole. Method and apparatus for continuously measuring the porosity of a moving wet porous continuous sheet. 3,762,211, Cl. 73-38.000.
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Race, William J., to Motorola, Inc. Dial pointer assembly for a radio/tape player. 3,763,332, Cl. 179-100.110.

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Raff, Paul; Ritzeri, Gerhard; and Weitz, Hans-Martin, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Prevention of fouling in hydrocarbon separation. 3,763,018, Cl. 203-9.000.

Ragaly, Istvan, to Bosch, Robert, G.m.b.H. Battery charging system supplied from a polyphase generator. 3,763,398, Cl. 317-13.00r.

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Raines, Stephen D.; and Wheeless, Leon L., Jr., to Bausch & Lomb Incorporated. Method of and apparatus for depositing a fluid in a gel. 3,762,877, Cl. 23-230.00b.

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Rappoport, Seymour F. Process and apparatus for treatment of textile materials. 3,761,977, Cl. 8-149.300.

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Rasmussen, Ole-Bendt. Yarnlike product kept together by circumjacent polymer material, and a method and an apparatus for producing said product. 3,762,142, Cl. 57-34.00r.

Rath, Heinrich Bernhard; Kaub, Manfred; and Brix, Hermann, to Girling Limited. Mechanical couplings. 3,762,511, Cl. 188-79.50p.

Rayment, John; McCordell, Derek Dexter; and Parr, Colin, to Pegg, Samuel, & Son Limited. Textile finishing processes. 3,762,866, Cl. 8-149.100.

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Reimers, James L. Repetitive heat treatment at speeds higher than feeding. 3,762,934, Cl. 99-182.000.

Reinhardt, Helmut; Brandt, Berndt; and Peters, Albert, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Processing of finely divided particulate materials. 3,762,851, Cl. 425-223.000.

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Reusser, Hans E., to Republic Steel Corporation. Traffic lane marker and reflector. 3,762,825, Cl. 404-16.000.

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Richards, Roy C.; Le Masters, Paul D.; and Shearer, James E., to General Motors Corporation. Internal combustion engine speed limit circuit. 3,762,383, Cl. 123-102.000.

Rickel, Allen D., to Trans-Clean, Inc., mesne. Vehicle washing apparatus. 3,761,986, Cl. 15-21.00d.

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Riebel, Hans-Jochem; Hammann, Ingeborg; Unterstenhofer, Gunter; Behrenz, Wolfgang; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. 1-Phenyl-2-cyanovinyl(thio)-phosphoric or phosphonic acid esters. 3,763,285, Cl. 260-940.000.

Riedell, Edwin H. Catheter bag and kit therefor. 3,762,399, Cl. 128-2.00f.

Riegel, Herbert: *See—*
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Rieter Machine Works, Ltd.: *See—*
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Robertson, Kenneth P. Burgler proof gun apparatus. 3,762,789, Cl. 312-305.000.

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Rocha, John Gonsalves, to Maremont Corporation. Caseless ammunition and gun therefor. 3,762,328, Cl. 102-38.000.

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Roess, Dieter, to Siemens Aktiengesellschaft. Device for phase-synchronization of several laser oscillators. 3,763,441, Cl. 331-94.500.

Rogers, Alan Fletcher, to Union Carbide Corporation. Tubularizing and detubularizing belt system. 3,762,536, Cl. 198-184.000.

Rohde, William E. Disposable mousetrap. 3,762,093, Cl. 43-83.500.

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Ron, Benjamin. Dual fluid supply circuit for a power steering and a hydraulic power brake. 3,762,492, Cl. 180-79.20r.

Roof, Lewis B.; Neer, Harold M.; and Burk, Marvin C., to Phillips Petroleum Company. Acoustical detecting apparatus. 3,762,197, Cl. 73-24.000.

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Roth, Johann; and Grimm, Werner, to Niezoldi & Kramer GmbH. Motion picture camera. 3,762,806, Cl. 352-121.000.

Rouis, Robert J. Wheel turning device. 3,762,239, Cl. 74-494.000.

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Ruppel, Kurt: *See—*
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Rushing, James M., to LTV Aerospace Corporation. Apparatus for shielding portions of a vehicle. 3,762,515, Cl. 191-8.000.

Russ, Paul E., Sr., to Gates Rubber Company, The. Tread element for flexible track. 3,762,779, Cl. 305-35.0eb.

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Russo, Ronald D.: *See—*
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Rvkoczy, Bohdan, to Du Pont de Nemours, E. I., and Company. Process for preparing hydrolyzed modified gelatin followed by reaction with dibasic acid anhydride. 3,763,138, Cl. 260-117.000.

Rye, Grover W.: *See—*
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Sagane, Norio; Nakata, Shinsaku; Ueda, Hiroshi; and Matumura, Teiji, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Apparatus for production of foamed sheet of ethylenic resin. 3,762,845, Cl. 425-4.00c.

Sagishima, Takayuki; Furuhashi, Michio; and Sasaki, Reiichi, to Matsushita Electric Industrial Co., Ltd. Reference signal indicating apparatus for tini-adjusting in color television receivers. 3,763,310, Cl. 178-5.4te.

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Salomon, Jacob. Packaging apparatus. 3,762,129, Cl. 53-186.000.
Saluti, Gerald Michael; and Dileone, Roland Ralph, to American Cyanamid Company. Preparation of a thermosettable polyimide. 3,763,114, Cl. 260-78.40r.
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Sandmeier, Arthur. Data reproduction apparatus. 3,762,808, Cl. 353-27.000.
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Sargent, Cassius E., to PPC Industries, Inc. Coupon-confining bag, method and apparatus. 3,762,628, Cl. 229-56.000.
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Satzinger, Gerhard; Herrmann, Manfred; and Vollmer, Karl-Otto. 3-Phenyl-(3H)-benzo-1,2,3-triazinones-(4). 3,763,158, Cl. 260-248.0as.
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Sayles, David C., to United States of America, Army. Combination burning rate catalyst and curative. 3,762,969, Cl. 149-19.200.
SCA Projekt Aktiebolag, mesne: *See—*
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Schmidt, Karl-Julius; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Phosphorus-containing esters of 2-hydroxyquinoxalines. 3,763,160, Cl. 260-250.00r.
Schmidt, Peter, to Eastman Kodak Company. Exposure control timing circuit. 3,762,288, Cl. 95-10.0ct.
Schmidt, William C., to Cincinnati Butchers Supply Company, The. Shackle tensioning device. 3,761,998, Cl. 17-24.000.
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Schultz, Walter Donald, to Chrysler Corporation. Engine drainage reuse system. 3,762,380, Cl. 123-73.00r.
Schulz, John C., to General Motors Corporation. Engine mount assembly. 3,762,671, Cl. 248-9.000.
Schumacher, Joseph S., to International Minerals & Chemical Corporation. Apparatus for handling and cooling foundry sand. 3,762,461, Cl. 164-270.000.
Schupack, Morris. Tendon grouting means. 3,762,937, Cl. 106-90.000.
Schur, Paul Elliot; Gallotello, Peter Edward; Keuler, Joseph Frederick; and Carter, James Milton, to Rome Knitting Mills, Inc. Guide bar control mechanism for knitting machines. 3,762,184, Cl. 66-86.00r.
Schurr, Charles Allan, to Square D Company. Compressible aire gap means compensating for thermal expansion of a lifting magnet coil. 3,763,453, Cl. 335-292.000.
Schwarz, Peter. Shadow mask having concave reflecting surface concentric with each aperture. 3,763,389, Cl. 313-92.00b.
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Shanbrom, Edward; Hainski, Martha B.; and Payne, John H., to Baxter Laboratories, Inc. Gamma globulin production from Cohn Fraction III using polyethylene glycol. 3,763,135, Cl. 260-112.00b.
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Sheckells, Amuel E., to International Steel Company. Collapsible revolving door having removable wings. 3,762,098, Cl. 49-44.000.
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Smolin, William, to Texaco Inc. Purification of secondary alkyl primary monomines. 3,763,239, Cl. 260-583.00n.
Smolka, Thomas Gordon, to Gertsch AG, mesne. Ski binding. 3,762,735, Cl. 280-11.35m.
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Speigel, Kenneth; and Wilson, Robert F., to GTE Sylvania Incorporated. Phosphor suspension for dip-coating metallic segments. 3,763,051, Cl. 252-301.30r.

Speinier, Simon, to Industrielle Handelscombinatie, N.V. Locking device. 3,762,235, Cl. 74-422.000.

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Stewart, Richard Gordon, to Parks-Cramer (Great Britain) Ltd. Apparatus for pneumatically cleaning open-end spinning machines. 3,762,143, Cl. 57-56.000.

Still, Leslie Ernest, to Precision Screw & Manufacturing Company Limited, The. Tools for fixing tubular fasteners in position. 3,762,200, Cl. 72-114.000.

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Stradley, James G.; and Sease, John D., to United States of America, Atomic Energy Commission. Manufacture of bonded-particle nuclear fuel composites. 3,763,292, Cl. 264-.500.

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Strizhenko, Vitaly Evgenievich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Kononenko, Vadim Grigorievich; Maznichenko, Stanislav Anisimovich; Stelmakh, Viktor Alexeevich; and Shekochikhin, Serafim Vasilievich. Pulse piston drive. 3,762,278, C. 91-468.000.

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Voegeli, Henry Carl. Article holder for exterior of box for containing mail or the like. 3,762,632, Cl. 232-33.000.

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Vuaille, Andre, to Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A. Injection devices for internal combustion engines. 3,762,386, Cl. 123-139.0dp.

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Wagner, Klaus; Roos, Ernst; Eue, Ludwig; and Hack, Helmuth, to Bayer Aktiengesellschaft. 2,4-Dicyano-6-nitro-benzene amines. 3,763,209, Cl. 260-465.00e.

Wagner, William E.; and Golightly, James S., to PPG Industries, Inc. Shaping, coating and tempering glass. 3,762,902, Cl. 65-60.000.

Wahlgren, Lars Osten, to Kamas Koarnmaskiner AB. Apparatus for drying materials. 3,762,065, Cl. 34-73.000.

Wahnschaffe, Jurgen, to Daimler-Benz Aktiengesellschaft. Hot-gas rotary piston engine. 3,762,167, Cl. 60-519.000.

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Weaver, Max A.; Straley, James M.; and Moore, William H., to Eastman Kodak Company. Polyamide and polyester fibers dyed with a 1,2,4-thiadiazolylazo-3-(cyclohexylamino) acylanilide. 3,762,861, Cl. 8-41.00r.
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Weil, Edward D., to Stauffer Chemical Company. Ureidoalkylphosphonates. 3,763,281, Cl. 260-932.000.
Weimer, Paul Kessler, to RCA Corporation. Digital and analog data handling devices. 3,763,480, Cl. 340-173.00r.
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White, Denis, to Doncasters Monk Bridge Limited. Forging dies for the forging of turbine and compressor blades or vanes. 3,762,210, Cl. 72-413.000.
White, Hugh Edward, to RCA Corporation. Linearity correction circuit for a cathode ray tube. 3,763,393, Cl. 315-276.00d.
White, Le Roy A.; Baum, Bernard O.; Holley, William H.; and Podall, Harold E., to United States of America, Interior. Microporous support for reverse osmosis membranes. 3,763,055, Cl. 260-2.50m.
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Widdig, Arno; Grewe, Ferdinand; Scheinpflug, Hans; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. 1-(2-Cyclohex ylideniminophenyl)-3-alkoxy-carbonyl-2-thioureas. 3,763,219, Cl. 260-470.000.
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Wilkes, Richard B., to Hipotronics, Inc. Method and apparatus for testing twisted pair wire to locate electrical insulation faults or measure twist or wire runout or sense breaks in. 3,763,426, Cl. 324-54.000.
Wilkins, Roy A., Jr. Disposable garbage container. 3,762,454, Cl. 150-1.000.
Will, Gunther. Porous polymeric compositions processes and products. 3,763,056, Cl. 260-2.501.
Willems, Jozef Frans, to Agfa-Gevaert N.V. Hydrophilic film-forming colloid composition. 3,762,928, Cl. 96-114.500.
William Prym-Werke KG: *See—*
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Wilson, Calvin L.; and Fox, John H., Jr., to Reynolds Metals Company. Pressure regulator construction and system utilizing the same. 3,762,431, Cl. 137-116.300.
Wilson, George E., to Haudaille Industries, Inc. Method of treating sewage using high polymer ratio flocculation agent biologically produced in situ. 3,763,039, Cl. 210-6.000.
Wilson, Julian L. Marble game with turntable board. 3,762,714, Cl. 273-134.0ga.
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Wincklhofer, Robert C.; and Weedon, Gene C., to Allied Chemical Corporation. Polyblend gems and the like and methods for producing them. 3,762,976, Cl. 156-173.000.
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Wing, Milton S.; and Mathews, Glenn W., to Dow Chemical Company, The. Vapor phase preparation of norbornenes. 3,763,253, Cl. 260-666.0py.
Winstel, Gunter, to Siemens Aktiengesellschaft. Procedure and preparation for the production of homogeneous and plane parallel epitactic growth layers of semiconducting compounds by melt epitaxy. 3,762,943, Cl. 117-201.000.
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Wirz, Walter, to Fahrni, Peter, head of Fahrni Institute, Ltd. Method for the manufacture of compressed boards. 3,762,974, Cl. 156-62.200.
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Wise, Lawrence D.; and Morrison, Glenn C., to Warner-Lambert Company. (2-(9-Thia-3- azabicyclo(4.2.1)nonan-3-yl)ethyl) guanidines. 3,763,185, Cl. 260-329.00f.
Withers, James C. Method of making reinforced composite structures. 3,763,001, Cl. 204-16.000.
Witherspoon, Linton S.; and Dunlap, Robert H. Projectile sabot. 3,762,332, Cl. 102-94.000.
Witsiepe, William K., to Du Pont de Nemours, E. I., and Company. Segmented thermoplastic copolyesters. 3,763,109, Cl. 260-75.00r.
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Wixon, Harold Eugene; and Trimmer, Robert Henry, to Colgate-Palmolive Company. Enhancing the apparent whiteness of fabrics by applying an effective amount of an alkali and heat stable water-soluble disozo blue dyestuff, fabric softening and detergent compoition therefor. 3,762,859, Cl. 8-18.000.
Woitun, Eberhard; Ohnacker, Gerhard; Narr, Berthold; Horch, Ulrike; and Kadatz, Rudolf, to Boehringer Ingelheim G.m.b.H. 2-Heterocyclic amino-4-morpholino-thieno(3,2-d)pyrimidines. 3,763,156, Cl. 260-247.100.
Wolf, Leo. Electrical strip cable assembly. 3,763,307, Cl. 174-117.0ff.
Wolf, Milton; and Sellstedt, John H., to American Home Products Corporation. Neutral cephalosporin anhydrides. 3,763,152, Cl. 260-243.00c.
Wolfe, Merritt W., to Goodyear Tire & Rubber Company, The. Apparatus for measuring the thickness of a buffed tire casing. 3,762,056, Cl. 33-143.00d.
Wolff, David F.; and Harke, Raymond J. Copy machine cooling and drying system. 3,762,812, Cl. 355-10.000.
Wolk, Piero, to Dresser Industries, Inc. Well instrument positioning device. 3,762,473, Cl. 166-241.000.
Woodcock, Thomas A., to A-T-O Inc. Leg guard. 3,761,960, Cl. 2-22.000.
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Wright, Colin S., to American Hoist & Derrick Company. Method of baling. 3,762,310, Cl. 100-3.000.
Wright, Eric John; and Robinson, Desmond Thomas, to Lucas, Joseph, (Industries) Limited. Apparatus for and method of manufacturing cores for ignition coils. 3,762,206, Cl. 72-382.000.
Wuest, Oliver, to Rieter Machine Works, Ltd. Apparatus of relaxing drawn high-polymeric filament threads. 3,762,147, Cl. 57-55.500.
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Yamada, Kaiiti; Morikawa, Yoshiyuki; and Matsumoto, Hidenosuke, to Matsushita Electric Industrial Co., Ltd. Cooling apparatus with delayed operation blower means. 3,762,178, Cl. 62-157.000.
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Yamahara, Takeshi; and Nakamura, Shinji, to Sumitomo Chemical Company, Ltd. Process for producing polyesters from carbamyloxy benzoic acid halides. 3,763,223, Cl. 260-47.00c.
Yamamoto, Osamu, to Kabushikikaisha Aichiden-kikosakusho. Electric can opener. 3,762,044, Cl. 30-4.00r.
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Yasui, Seimei; Hirooka, Masaaki; and Oshima, Teruo, to Sumitomo Chemical Company, Ltd. 5-Alkapolyenyl-2-norbornenes. 3,763,252, Cl. 260-666.0py.
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Yazawa, Kazuhiko, to Hitachi, Ltd. Solid state oscillator-detector device of electromagnetic waves. 3,763,407, Cl. 317-235.000.
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Yoshikawa, Seiichi. Rivet head forming tool. 3,762,199, Cl. 72-67.000.
Yoshizawa, Shigeru; Mikami, Itsuo; Kamoshita, Gen-Ichi; and Saito, Nobuo, to Hitachi, Ltd. Driving system in magnetic single wall domain device. 3,763,478, Cl. 340-174.0tb.
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Ziegelmeyer, Harold R., to McDonnell Douglas Corporation. Variable dwell control attachment. 3,762,827, Cl. 408-14.000.
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Zimmer, Peter. Apparatus for the production of seamless hollow cylinders. 3,763,030, Cl. 204-281.000.
Zimmerman, Abraham A.; Furlong, Louis E.; and Shannon, Hugh F., to Esso Research and Engineering Company. Air-fuel ratio distribution to enhance gasoline engine operation. 3,762,891, Cl. 44-76.000.
Zoot, Robert M.; and Erb, Gilbert E., to Ati, Inc. Self-levelling laser reference plane. 3,762,820, Cl. 356-152.000.

LIST OF REISSUE PATENTEES

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Hanfmann, Alexander M., to Western Electric Co., Inc. Methods of manufacturing thin film components. Re. 27,766, 10–2–73, Cl. 29—62.

Hanfmann, Alexander M., to Western Electric Co., Inc. Method of manufacturing thin film components. Re. 27,772, 10–2–73. Cl. 219—121.01.

Hermes, Julius, to Martin Processing Co., Inc. Method for the continuous texturizing or voluminizing of textile materials. Re. 27,773, 10–2–73, Cl. 28—72.1.

Jernstrom, Karl W. Compactor. Re. 27,774, 10–2–73, Cl. 100—52.

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Morrison, Robert F., and R. D. Joy, System for converting continuous filament tow into staple. Re. 27,764, 10–2–73, Cl. 19.6.

Owens, John E., and W. R. Vieth, to E. I. du Pont de Nemours and Co. Process for quenching extruded polymeric film. Re. 27,771, 10–2–73, Cl. 264—22.

Salomon, Jacob. Apparatus for arranging substantially laminar articles into spaced groups. Re. 27,765, 10–2–73, Cl. 198—180.

Schoepflin, Charles F. Fluid level gauge assembly. Re. 27,767, 10–2–73, Cl. 73—318.

Siegel, Lester A., to American Cyanamid Co. Coded ink recording and reading. Re. 27,770, 10–2–73, Cl. 235—61.11.

Stafford, Larry O., to Beloit Corp. Apparatus for casting multi-layer composite film. Re. 27,769, 10–2–73, Cl. 425—131.

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Bagguley, Richard B., and C. T. Mascia, to Continental Can Co., Inc. Can or similar article. 228,490, 10–2–73, Cl. D9—216.

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Buckley, James F., to Pomco Enterprises, Inc. Prism holder for laser beam reflection on electrical surveying instruments. 228,525, 10–2–73, Cl. D57—1.

Burkett, Wilford B., and A. J. Carsello, to McCulloch Corp. Storage battery case. 228,503, 10–2–73, Cl. D26—6.

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De Luca, Paul V., and W. V. Carney, to Porta Systems Corp. Telephone talk-line monitoring switch assembly. 228,504, 10–2–73, Cl. D26—14.

De Luca, Paul V., and W. V. Carney, to Porta Systems Corp. Electrical telephone talk-line monitoring switch apparatus. 228,507, 10–2–73, Cl. D26—14.

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Farris, Richard W. Deodorizer or the like. 228,499, 10–2–73, Cl. D23—150.

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Kawano, Takeyoshi, to Matsushita Electric Industrial Co., Ltd. Combined amplifier cassette tape recorder. 228,506, 10–2–73, Cl. D26—14.

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Marshall, Edward M. Cooking grill. 228,484, 10–2–73, Cl. D7—110.

Mascia, Carmen T., to Continental Can Co., Inc. Can or similar article. 228,489, 10–2–73, Cl. D9—216.

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Nishimura, Masatsugu, K. Ohnuma, and M. Okada, to Mitsubishi Rayon Co., Ltd. Lighting louver. 228,518, 10–2–73. Cl. D48—16.
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Sahloff, Willard H., to Handy-Andy Specialty Co., Inc. Base for bathroom fixture or the like. 228,481, 10–2–73, Cl. D6—86.
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Watanabe, Riki, to Kabushiki Kaisha Koparu. Digital calendar clock. 228,515, 10–2–73, Cl. D42—7.
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50C	3,761,985
50R	3,761,987
83	3,761,988
104.92	3,761,989
160	3,761,990
209AH	3,761,993
209R	3,761,991
210R	3,761,992
	3,761,994
257.06	3,761,995
350	3,761,996
422	3,761,997

CLASS 17

24	3,761,998

CLASS 19

.6	Re.27,764

CLASS 21

2.7R	3,762,873
57	3,762,874
60.5A	3,762,875

CLASS 23

230B	3,762,877
232E	3,762,878
259	3,762,879
273R	3,762,880

CLASS 24

16PB	3,761,999
204	3,762,000
205.01C	3,762,002
230A	3,762,001

CLASS 26

56	3,762,003

CLASS 28

4N	3,762,004
72.1	Re.27,773

CLASS 29

95R	3,762,005
95.1R	3,762,006
103R	3,762,007
105	3,762,008
149.5R	3,762,009
156.6	3,762,010
157.3R	3,762,011
159R	3,762,012
191	3,762,881
195C	3,762,882
196.2	3,762,884
	3,762,885
196.3	3,762,883
200P	3,762,013
203V	3,762,015
203	3,762,014
205R	3,762,016
	3,762,017
211M	3,762,018
229	3,762,019
	3,762,020
263	3,762,021
275	3,762,022
400	3,762,023
407	3,762,024
419	3,762,025
420	3,762,026
452	3,762,027
470.1	3,762,028
	3,762,029
470.3	3,762,030
471.3	3,762,031
493	3,762,032
522	3,762,033
523	3,762,034
558	3,762,035
568	3,762,036
574	3,762,037
577	3,762,038
588	3,762,039
593	3,762,040
596	3,762,041
598	3,762,042
620	Re.27,766
629	3,762,043

CLASS 30

4R	3,762,044
40.1	3,762,045
124	3,762,048
172	3,762,046
385	3,762,047

CLASS 32

5	3,762,049
14A	3,762,050
22	3,762,051
27	3,762,052

CLASS 33

1BB	3,762,053
41D	3,762,054
81	3,762,055
143D	3,762,056
147K	3,762,057
161	3,762,058
174TD	3,762,060
174G	3,762,059
179.5R	3,762,061
180R	3,762,068
321	3,762,062

CLASS 34

8	3,762,063
45	3,762,064
73	3,762,065
150	3,762,066
201	3,762,067

CLASS 35

10.2	3,763,304
17	3,762,069
	3,762,070
35F	3,762,071
48R	3,762,072

CLASS 36

2.5E	3,762,075
2.5P	3,762,073
2.5W	3,762,074

CLASS 37

4	3,762,076
41	3,762,077
54	3,762,078
141R	3,762,079

CLASS 38

102.91	3,762,080

CLASS 40

2.2	3,762,081
15	3,762,273
34	3,762,082
130B	3,762,083
130K	3,762,085
138	3,762,084
332	3,762,086

CLASS 42

70F	3,762,089
84	3,762,087

CLASS 43

15	3,762,090
17.2	3,762,091
17.6	3,762,092
42.5	3,762,088
83.5	3,762,093
92	3,762,094

CLASS 44

10E	3,762,886
51	3,762,887
62	3,762,888
66	3,762,889
	3,762,890
72	3,762,892
76	3,762,891

CLASS 46

202	3,762,095
210	3,762,096

CLASS 47

34.11	3,762,097

CLASS 48

190	3,762,893

CLASS 49

44	3,762,098
360	3,762,099
468	3,762,100

CLASS 51

78	3,762,101
105SP	3,762,102
110	3,762,103
127	3,762,105
165R	3,762,104
241	3,762,106
290	3,762,107
298	3,762,894
309	3,762,895

CLASS 52

2	3,762,108
11	3,762,109
63	3,762,110
73	3,762,111
79	3,762,112
102	3,762,113
167	3,762,114
169	3,762,117
171	3,762,118
290	3,762,120
202	3,762,119
236	3,762,115
239	3,762,116
465	3,762,121
509	3,762,123
666	3,762,124
741	3,762,122

CLASS 53

22.9	3,762,159
51	3,762,125
55	3,762,126
177	3,762,127
182	3,762,128
183	3,762,130
186	3,762,129
	3,762,131
378	3,762,132

CLASS 55

44	3,762,133
71	3,762,134
100	3,762,135
158	3,762,136

CLASS 56

13.3	3,762,137
295	3,762,138
328TS	3,762,139
328R	3,762,140

CLASS 57

31	3,762,141
34R	3,762,142
55.5	3,762,147
56	3,762,143
58.91	3,762,144
58.95	3,762,146
77.3	3,762,148
77.4	3,762,149
145	3,762,145
156	3,762,150

CLASS 58

22	3,762,151
23R	3,762,152
	3,762,153
29	3,762,154
	3,762,155
63	3,762,156
125C	3,762,157
152E	3,762,158

CLASS 60

10.5	3,762,160
39.16	3,762,161
49	3,762,162
277	3,762,163
425	3,762,164
445	3,762,165
493	3,762,166
519	3,762,167

CLASS 61

1F	3,762,168
	3,762,169
13	3,762,170
36A	3,762,171
45C	3,762,172
53	3,762,173
85	3,762,174

CLASS 62

45	3,762,175
74	3,762,176
123	3,762,177
157	3,762,178
223	3,762,179
	3,762,180
320	3,762,181
427	3,762,182

CLASS 64

27	3,762,183

CLASS 65

3	3,762,896
	3,762,897
30	3,762,898
42	3,762,899
59	3,762,900
	3,762,901
60	3,762,902
107	3,762,903
	3,762,904
158	3,762,908
160	3,762,906
164	3,762,907
273	3,762,905

CLASS 66

86R	3,762,184
125R	3,762,185
190	3,762,186

CLASS 68

5E	3,762,187
19.1	3,762,188
177	3,762,189

CLASS 69

32	3,762,190

CLASS 70

18	3,762,191
352	3,762,192
419	3,762,193

CLASS 71

1	3,762,909
23	3,762,910

CLASS 72

8	3,762,194
11	3,762,195
12	3,762,196
28	3,762,198
67	3,762,199
114	3,762,200
209	3,762,201
245	3,762,202
255	3,762,203
316	3,762,204
339	3,762,205
382	3,762,206
388	3,762,207
402	3,762,209
413	3,762,210

CLASS 73

24	3,762,197
38	3,762,211
40.7	3,762,212
45.3	3,762,213
61R	3,762,214
71.3	3,762,215
104	3,762,216
136A	3,762,217
151	3,762,218
155	3,762,219
160	3,762,220
189	3,762,876
194E	3,762,221
318	Re.27,767
380	3,762,222
398AR	3,762,208
398C	3,762,223
420	3,762,224
457	3,762,225

CLASS 74

5.4	3,762,226
89.15	3,762,227
128	3,762,228
217S	3,762,229
230.17F	3,762,231
230.3	3,762,230
231M	3,762,232
242.14R	3,762,233
409	3,762,234
422	3,762,235
434	3,762,236
479	3,762,237
485	3,762,238
494	3,762,239
498	3,762,240
711	3,762,241
822	3,762,242

CLASS 75

63	3,762,911
65ZM	3,762,912
122	3,762,913
130AB	3,762,914
130R	3,762,915
141	3,762,916
169	3,762,917
170	3,762,918
204	3,762,919
208R	3,762,920

CLASS 76

104R	3,762,243

CLASS 81

119	3,762,244
177G	3,762,245

CLASS 82

4C	3,762,246
12	3,762,247
34A	3,762,248

CLASS 83

9	Re.27,768
	3,762,249
27	3,762,250
39	3,762,251
94	3,762,252
102	3,762,253
107	3,762,254
309	3,762,255
356.3	3,762,256
364	3,762,257
383	3,762,258
471.3	3,762,259
560	3,762,260
649	3,762,261
658	3,762,262
660	3,762,263
698	3,762,264

CLASS 84

1.03	3,763,305
1.24	3,762,265

CLASS 85

37	3,762,266

CLASS 89

1B	3,762,267
34	3,762,268
40E	3,762,269

CLASS 90

1	3,762,270
11D	3,762,271
11.58	3,762,272
13B	3,762,274
58C	3,762,275

CLASS 91

197	3,762,276
376	3,762,277
468	3,762,278

CLASS 92

85	3,762,279
98D	3,762,280

CLASS 93

1C	3,762,281
35VL	3,762,282
36R	3,762,283

CLASS 95

1R	3,762,284
10CE	3,762,285
10CT	3,762,288
	3,762,289
10C	3,762,286
	3,762,287
13	3,762,290
31AC	3,762,291
36R	3,762,292
37	3,762,293
44C	3,762,294
44R	3,762,298
53EA	3,762,295
53EB	3,762,296
	3,762,297
56	3,762,299
89R	3,762,300

CLASS 96

55	3,762,921
56	3,762,922
63	3,762,923
94	3,762,924
100	3,762,925
111	3,762,926
	3,762,927
114.5	3,762,928

CLASS 98

40C	3,762,301
58	3,762,302
114	3,762,303
119	3,762,304

CLASS 99

17	3,762,929
68	3,762,930
85	3,762,931
92	3,762,932
163	3,762,933
182	3,762,934
450.4	3,762,305
	3,762,306
532	3,762,307
632	3,762,308

CLASS 100

3	3,762,309
	3,762,310
49	3,762,311
52	Re.27,774
	3,762,312
	3,762,313
92	3,762,314

215 3,762,321

CLASS 101

40 3,762,315
45 3,762,316
68 3,762,317
124 3,762,318
155 3,762,319
183 3,762,320
228 3,762,322
350 3,762,323
3,762,324
453 3,762,325

CLASS 102

20 3,762,326
37.8 3,762,327
38 3,762,328
42C 3,762,329
64 3,762,330
70.2R 3,762,331
94 3,762,332

CLASS 104

12 3,762,333
101 3,762,334
173 3,762,335

CLASS 105

136 3,762,336
159 3,762,337
199CB 3,762,338
3,762,339
366D 3,762,340
376 3,762,341

CLASS 106

40R 3,762,935
54 3,762,936
90 3,762,937

CLASS 108

51 3,762,342
53 3,762,343
58 3,762,344

CLASS 109

22 3,762,345

CLASS 112

79R 3,762,346
105 3,762,347
121.12 3,762,348
158B 3,762,349
231 3,762,350
262 3,762,351

CLASS 114

.5D 3,762,352
39 3,762,353
41 3,762,354
66.5H 3,762,355
150 3,762,356
208A 3,762,357

CLASS 115

7 3,762,358
34R 3,762,359

CLASS 116

28R 3,762,360
124R 3,762,361

CLASS 117

63 3,762,938
75 3,762,939
76F 3,762,940
93.1CD 3,762,941
137 3,762,942
201 3,762,943
3,762,944
215 3,762,945
227 3,762,946

CLASS 118

5 3,762,362
16 3,762,363
33 3,762,364
212 3,762,365
262 3,762,366
422 3,762,367
429 3,762,368

CLASS 119

1 3,762,369
14.03 3,762,370
14.14 3,762,371
16 3,762,372
51.11 3,762,373
3,762,374

CLASS 123

8.01 3,762,376
3,762,377
32AE 3,762,379
32H 3,762,378
73R 3,762,380
90.15 3,762,381
90.67 3,762,382
102 3,762,383
119A 3,762,384
122A 3,762,385
139DP 3,762,386
179A 3,762,387
193CH 3,762,388
197AB 3,762,389

CLASS 125

8.31 3,762,375

CLASS 126

92R 3,762,390
121 3,762,391
210 3,762,392
263 3,762,393
300 3,762,394
350R 3,762,395

CLASS 127

15 3,762,947
46A 3,762,948

CLASS 128

1C 3,762,396
2F 3,762,399
2R 3,762,398
2.05S 3,762,397
18 3,762,400
20 3,762,401
33 3,762,402
75 3,762,403
78 3,762,404
84C 3,762,405
91R 3,762,406
142.3 3,762,407
145.8 3,762,408
194 3,762,409
229 3,762,410
230 3,762,411
283 3,762,412
285 3,762,413
3,762,414
290 3,762,415
305 3,762,416
321 3,762,417
335.5 3,762,418
403 3,762,419
417 3,762,420
583 3,762,421

CLASS 131

10.1 3,762,422
17R 3,762,423

CLASS 132

33R 3,762,424
110 3,762,425

CLASS 134

3 3,762,949
6 3,762,950
16 3,762,951
38 3,762,952
3,762,953
195 3,762,426

CLASS 136

22 3,762,954
83R 3,762,955
86A 3,762,956
121 3,762,957
134R 3,762,958
141 3,762,959

CLASS 137

7 3,762,427
88 3,762,428
92 3,762,429
98 3,762,430
116.3 3,762,431
317 3,762,432
469 3,762,433
489 3,762,434
505.22 3,762,435
505.35 3,762,436
512 3,762,437
515.5 3,762,438
549 3,762,439
551 3,762,440
597 3,762,441
625.2 3,762,442
625.27 3,762,443
625.66 3,762,444
806 3,762,445

CLASS 138

97 3,762,446
113 3,762,447
171 3,762,448

CLASS 139

127 3,762,449

CLASS 141

5 3,762,450
186 3,762,451

CLASS 144

134D 3,762,452

CLASS 145

61C 3,762,453

CLASS 148

3 3,762,960
4 3,762,961
11.5A 3,762,962
12 3,762,963
3,762,964
24 3,762,965
175 3,762,966
3,762,968
187 3,762,967

CLASS 149

19.2 3,762,969
21 3,762,970
36 3,762,971
109 3,762,972

CLASS 150

1 3,762,454

CLASS 151

28 3,762,455

CLASS 152

213A 3,762,456
239 3,762,457
361R 3,762,458

CLASS 156

17 3,762,973
62.2 3,762,974
71 3,762,975
173 3,762,976
229 3,762,977
308 3,762,978
333 3,762,979
461 3,762,980

CLASS 160

19 3,762,459
40 3,762,460

CLASS 161

3,762,981
47 3,762,982
49 3,762,983
57 3,762,984
67 3,762,985
183 3,762,988
227 3,762,986
251 3,762,987

CLASS 162

30 3,762,989
83 3,762,990
352 3,762,991

CLASS 164

270 3,762,461
274 3,762,462

CLASS 165

8 3,762,463
95 3,762,464
107 3,762,465
108 3,762,466
163 3,762,467
177 3,762,468

CLASS 166

5.7 3,762,469
182 3,762,470
224S 3,762,471
241 3,762,472
3,762,473
250 3,762,474
272 3,762,475
294 3,762,476

CLASS 169

2R 3,762,477
24 3,762,478
28 3,762,479

CLASS 171

5.4 3,763,311

CLASS 172

4 3,762,480
40 3,762,481
126 3,762,482
700 3,762,483

CLASS 173

119 3,762,484

CLASS 174

115 3,763,306
117FF 3,763,307

CLASS 175

65 3,762,485
313 3,762,486

CLASS 176

1 3,762,992
19R 3,762,993
36R 3,762,994
68 3,762,995
78 3,762,996

CLASS 178

5.2R 3,763,308
5.4ST 3,763,312
5.4TE 3,763,310
5.4P 3,763,309
6.6R 3,763,313
7.3R 3,763,314
7.5R 3,763,315
3,763,316
69.5TV 3,763,317

CLASS 179

15A 3,763,318
16F 3,763,319
3,763,320
18AH 3,763,321
41A 3,763,322
77 3,763,323
84VF 3,763,324
98 3,763,325
99 3,763,326
100.11 3,763,332
100.2C 3,763,329
100.2P 3,763,331
100.2R 3,763,328
100.2T 3,763,327
100.2Z 3,763,330
100.41K 3,763,335
107R 3,763,333
115.5R 3,763,334

CLASS 180

24.09 3,762,487
66F 3,762,488
69R 3,762,489
70R 3,762,490
79.1 3,762,491
79.2B 3,762,493
79.2R 3,762,492
103 3,762,494
3,762,495

CLASS 181

.5AC 3,762,496
33K 3,762,497
50 3,762,498

CLASS 182

3 3,762,499
93 3,762,500
3,762,501
223 3,762,502

CLASS 184

6.12 3,762,503
15A 3,762,504

CLASS 188

1C 3,762,505
59 3,762,506
65.1 3,762,507
70B 3,762,508
73.1 3,762,509
79.5P 3,762,510
3,762,511
189 3,762,512
196D 3,762,513
300 3,762,514

CLASS 191

8 3,762,515
49 3,763,336

CLASS 192

84C 3,762,516
85AB 3,762,517
87.13 3,762,518
105BB 3,762,519
106F 3,762,520
106.2 3,762,521
111A 3,762,522
139 3,762,523
142R 3,762,524

CLASS 193

23 3,762,525

CLASS 194

1M 3,762,526
9R 3,762,527

CLASS 195

28N 3,762,998
3,762,999
3,763,008
28R 3,762,997
29 3,763,000
31R 3,763,009
63 3,763,010

CLASS 197

105 3,762,528
133R 3,762,529
151 3,762,530

CLASS 198

24 3,762,531
117 3,762,532
127R 3,762,533
165 3,762,534
168 3,762,535
180 Re.27,765
184 3,762,536
213 3,762,537
219 3,762,538

CLASS 200

19R 3,763,337
61.06 3,763,338
67B 3,763,339
148D 3,763,340
153G 3,763,341

CLASS 202

93 3,763,012
100 3,763,011
103 3,763,013
173 3,763,014

CLASS 203

6 3,763,017
9 3,763,015
3,763,018
12 3,763,019
14 3,763,020
20 3,763,021
25 3,763,022
63 3,763,023
85 3,763,016

CLASS 204

1R 3,763,024
1T 3,763,025
16 3,763,001
37R 3,763,003
37 3,763,002
38A 3,763,004
90 3,763,005
103 3,763,006
192 3,763,026
195C 3,763,007
224R 3,763,027
237 3,763,028
279 3,763,029
281 3,763,030
298 3,763,031

CLASS 206

42 3,762,539
47A 3,762,540
56DF 3,762,541
58 3,762,542
62P 3,762,543
78B 3,762,545
78R 3,762,544

CLASS 208

78 3,763,033
3,763,034
93 3,763,032
136 3,763,035
180 3,763,036
313 3,763,037

CLASS 209

111.6 3,762,546
326 3,762,547

CLASS 210

4 3,763,038
6 3,763,039
27 3,763,040
42 3,763,041
123 3,762,549
126 3,762,550
141 3,762,551
146 3,762,552
152 3,762,553
170 3,762,548
179 3,762,554
242 3,762,556
3,762,557
3,762,558
293 3,762,559
321 3,762,555
350 3,762,560
401 3,762,561
415 3,762,563
446 3,762,564
460 3,762,562
3,762,565
490 3,762,566
532 3,762,567

CLASS 211

1.5 3,762,568
5 3,762,569
13 3,762,570
3,762,571
24 3,762,572
34 3,762,573
41 3,762,574

CLASS 213

166 3,762,575

CLASS 214

1D 3,762,576
1P 3,762,578
1R 3,762,577
6H 3,762,579
10.5D 3,762,580
16.4R 3,762,581
3,762,582
82 3,762,583
85.5 3,762,584
86A 3,762,585
302 3,762,586
450 3,762,587
730 3,762,588
3,762,589
775 3,762,590

CLASS 215

100.5 3,762,591

CLASS 219

59 3,763,342
76 3,763,343
116 3,763,344
121EM 3,763,345
3,763,346
121LM Re.27,772
275 3,763,347
347 3,763,348
536 3,763,349
549 3,763,350

CLASS 220

4B 3,762,592
6 3,762,593
21 3,762,594
44R 3,762,595
54 3,762,597
3,762,598
63R 3,762,599
97R 3,762,600

CLASS 221

2 3,762,601
195 3,762,602
211 3,762,603

CLASS 222

5 3,762,604
70 3,762,605
185 3,762,607
193 3,762,608
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